DOCUMENT RESUME

ED 136 029 08 CE 010 174

AUTHOR Whinfield, Richard W.
TITLE A Comparative Study of State Staffing Patterns and Delivery Systems of Vocational Education and Their Relative Effectiveness. Final Report.
INSTITUTION Connecticut Univ., Storrs. Dept. of Higher, Technical, and Adult Education.
SPONS AGENCY Office of Education (DHEW), Washington, D.C.
BUREAU NO V0221VZ
PUB DATE Apr 76
GRANT OEG-0-74-1644
NOTE 164p.

EDRS PRICE MF-$0.83 HC-$8.69 Plus Postage.
DESCRIPTORS *Administrative Organization; Comparative Analysis; *Delivery Systems; Educational Research; Expenditures; Higher Education; Post Secondary Education; *Program Effectiveness; Schools; Secondary Education; Staff Improvement; Staff Utilization; *State Boards of Education; State Federal Aid; State Programs; *Vocational Education

ABSTRACT

This study, which grew out of increasing concern over vocational educators' tendency to seldom look at the "gestalt" of State vocational education organizational structure, shows some potential ways of looking at the vocational education system which have here-to-for not been attempted. This study also provides, for those who have not addressed the issue of "the system", findings which should give new insights into the forces working within vocational education which effect its output. Seven chapters are included: (1) Introduction (The Problem, Purpose of the Study, Data, and Special Concerns and Limitations), (2) State Administration (State Boards of Education, State Board of Vocational Education, State Board of Vocational Education Structure, State Director of Vocational Education, State Vocational Staff Descriptions, Expenditures), (3) Delivery Systems (General Description of Schools by USOE Category, Delivery System Description, Descriptions, and Local Staff), (4) Program Effectiveness (Presentation of Effectiveness Data), (5) Data Treatment, (6) Data Presentation, and (7) Findings and Conclusions. The appendixes contain flow charts of four generalized patterns of organization; U.S. official definitions of types of institutions; titles used by different States to describe institutions; data by State for changes in Federal expenditures per pupil, total expenditure per pupil, staff enrollments, and placement and completion; institutional types used by each State, and the data collection instrument and instructions. (HD)

Documents acquired by ERIC include many informal unpublished materials not available from other sources. ERIC makes every effort to obtain the best copy available. Nevertheless, items of marginal reproducibility are often encountered and this affects the quality of the microfiche and hardcopy reproductions ERIC makes available via the ERIC Document Reproduction Service (EDRS). EDRS is not responsible for the quality of the original document. Reproductions supplied by EDRS are the best that can be made from the original.

ED136029

FINAL REPORT

Project No. V0221VZ

Grant or Contract No. OEG-0-74-1644

A Comparative Study of State Staffing Patterns and Delivery Systems of Vocational Education and Their Relative Effectiveness

Research Project in Vocational Education
Conducted under
Part C of the Vocational Education Act
of 1963 as Amended in 1968

U.S. DEPARTMENT OF HEALTH,
EDUCATION & WELFARE
NATIONAL INSTITUTE OF
EDUCATION
THIS DOCUMENT HAS BEEN REPRODUCED EXACTLY AS RECEIVED FROM THE PERSON OR ORGANIZATION ORIGINATING IT. POINTS OF VIEW OR OPINIONS STATED DO NOT NECESSARILY REPRESENT OFFICIAL NATIONAL INSTITUTE OF EDUCATION POSITION OR POLICY

The project report herein was performed pursuant to a grant from the Office of Education, U.S. Department of Health, Education and Welfare. Contractors or grantees undertaking such projects under Government sponsorship are encouraged to express freely their professional judgment in the conduct of the project. Points of view or opinions stated do not, therefore, necessarily represent official Office of Education position or policy.

Richard W. Whinfield

Department of Higher, Technical and Adult Education
University of Connecticut
Storrs, Connecticut 06268

April 1976

CE 010 174

TABLE OF CONTENTS

Page

LIST OF TABLES v

FORWARD viii

CHAPTER

I INTRODUCTION 1

- The Problem 2
- Purpose of the Study 3
  - Planning 3
  - A Response 3
  - Attempt to Systematize Study 3
  - Data Reporting 3
- Data 4
  - Variables 4
  - Data Collection 5
  - Data Treatment 5
- Special Concerns and Limitations 6
  - Data 6
  - Study Procedures 7

II STATE ADMINISTRATION 11

  - Introduction 11
- State Boards of Education 11
  - Background 11
- State Board of Vocational Education 16
  - Significance 16
  - Use Within This Study 17
  - Expanded Scope of Vocational Education 18
  - Other Factors Affecting State Administration 18
- State Board of Vocational Education Structure 19
- State Director of Vocational Education 19
  - The Hierarchal Position 22
- State Vocational Staff Descriptions 23
  - Organizational Diversity 27
  - Efforts to Improve State Administration 27
- Expenditures 28
  - Expenditures in large cities. 31
  - An overview of expenditures included in this study. . 31
  - Federal, State and Local Expenditures 33
  - Handicapped and Disadvantaged as a Percent of Total Vocational Expenses 34

CHAPTER Page

III DELIVERY SYSTEMS 36

Introduction 36
Data Base 37
General Descriptions of Schools by USOE Category 39
Delivery Systems Description 39
Delivery System Description 39
General Description 42
Board Level 43
Facilities 43
Descriptions 44
Regular High School 44
Comprehensive High Schools 44
Comprehensive High Schools with Cross Enrollments . . 46
Occupational Training Annex 46
Regional/Area Vocational-Technical School 47
Regional Skill Centers 48
Adult and Continuing Education Schools 49
Technical Training Center 50
Technical Institutes 50
Community/Junior Colleges 51
University Branches 52
Colleges and Universities 52
Other Kinds of Schools 53
Local Staff 54

IV PROGRAM EFFECTIVENESS 55

Background 55
Presentation of Effectiveness Data 59
Enrollment 59
Placements 61
Completion 63
Completion/1000 Enrollment 63
Summary of Effectiveness Data 64

V DATA TREATMENT 65

State Department Variables 67
Delivery Systems Data 68
Program Effectiveness Data 69

VI DATA PRESENTATION 71

The Statistical Technique 71
The Procedure 71

CHAPTER Page

VII FINDINGS AND CONCLUSIONS 91

Findings 91
General 91
Specific Findings 92
Conclusions 93

BIBLIOGRAPHY 95

APPENDICES

A Four Generalized Patterns of Organization 107

B U. S. Official Definitions of Types of Institutions . . . 112

C Titles Used by Different States to Describe Institutions . 114

D Data by State for Changes in Federal Expenditures per Pupil, Total Expenditure per Pupil, Staff Enrollments, Placement and Completion 117

E The Institutional Types Used by Each State 132

F Data Collection Instrument and Instructions 134

LIST OF TABLES

Table Page

I The State Board of Education (SBE): 1972 14

II The Hierarchal Position of Responsibility of the State Director of Vocational Education to the State Board of Control (SBVE) 22

III Number of States Showing Decrease and Increase from 1970-71 to 1972-73 in Federal Expenditure per student, By Total and Level 32

IV Means and Standard Deviations in Change of Federal Expenditure per Pupil, 1970-71 to 1972-73 33

V Number of States Showing Decrease and Increase in Total per Pupil Expenditures by Total and Level, from 1970-71 to 1972-73 33

VI Means and Standard Deviation in Change of Federal, State and Local Expenditures, per Pupil 1970-71 to 1972-73 34

VII Means and Standard Deviations of Change in Ratio of State/Local Expenditures to Federal Expenditures of Handicapped and Disadvantaged Expenditure 35

VIII A 1973 Comparison of Six States Reports with Previously Accumulated Data. Percent of Federal Aid Used for Vocational Education 38

IX Summary of Accumulated Descriptive Data of Local Delivery Systems 40

X Means and Standard Deviation of Changes Occurring Between 1970-71 and 1972-73 of Vocational Enrollments . . 60

XI Number of States Showing Increase and Decrease in Enrollment by Level and Combination of Levels, 1970-71 to 1972-73 61

XII Means and Standard Deviations of Change Occurring Between Vocational Placements/1000 Completion, 1970-71 to 1972-73 62

Table Page

XIII Number of States Showing Increase and Decrease of Placement by Level, 1970-71 to 1972-73 62

XIV Means and Standard Deviations of Changes in Completion/1000 Enrollment, 1970-71 to 1972-73 63

XV Correlations of Selected Statistical Data 1970-71 with 1972-73 66

XVI Correlations of Independent Variables Associated with Dependent Variable Change in Total Enrollment/1000 Population, 1970-71 to 1972-73 72

XVII Independent Factors Which Best Account for Variations in Total Enrollment per 1000 Population Change 1970-71 to 1972-73 73

XVIII Correlations of Independent Variables Associated with Dependent Variable Change in Total Completion/1000 Enrollment, 1970-71 to 1972-73 74

XIX Independent Factors Which Best Account for Variations in Total Completions per 1000 Population Change 1970-71 to 1972-73 75

XX Correlations of Independent Variables Associated with Dependent Variable Change in Total Placement/1000 Completion, 1970-71 to 1972-73 76

XXI Independent Factors Which Best Account for Variations in Total Placement per 1000 Completion Change 1970-71 to 1972-73 77

XXII Correlations of Independent Variables Associated with Dependent Variable Change in Secondary Enrollment/1000, 15-19 Population, 1970-71 to 1972-73 78

XXIII Independent Variables Which Best Account for Variations in Secondary Enrollment per 1000, 16-19 Population Change, 1970-71 to 1972-73 79

XXIV Correlations of Independent Variables Associated with Dependent Variable Change in Secondary Placement/1000 Completion, 1970-71 to 1972-73 80

XXV Independent Variables Which Best Account for Variations in Secondary Placement per 1000 Completion Change 1970-71 to 1972-73 81

Table		Page
XXVI	Correlations of Independent Variables Associated with Dependent Variable Change in Post Secondary Enrollment/1000, 24-64 Population, 1970-71 to 1972-73	82
XXVII	Independent Variables Which Best Account for Variations in Post Secondary Enrollments per 1000, 19-24 Population Change, 1970-71 to 1972-73	83
XXVIII	Correlations of Independent Variables Associated with Dependent Variable Change in Post Secondary Placement/1000, 19-24 Population, 1970-71 to 1972-73	84
XXIX	Independent Variables Which Best Account for Variations in Post Secondary Placement per Completion Change 1970-71 to 1972-73	85
XXX	Correlations of Independent Variables Associated with Dependent Variable Change in Adult Enrollment/1000, 25-64 Population, 1970-71 to 1972-73	86
XXXI	Independent Variables Which Best Account for Variations in Adult Enrollment per 1000, 25-64 Population Change 1970-71 to 1972-73	87
XXXII	Correlations of Independent Variables Associated with Dependent Variable Change in Adult Placement/1000 Completion, 1970-71 to 1972-73	88
XXXIII	Independent Variables Which Best Account for Variations in Adult Placement per 1000 Completions, 1970-71 to 1972-73	89

FORWARD

The title of this report is in some ways misleading. The study does include an investigation into State management, delivery systems, and effectiveness. The expectations one might assume under such a title is that "we'll finally get some answers or insights into the entire structure and operation of vocational education." That would be a highly unlikely accomplishment but the study could shed some clues on possible interrelationships.

Hopefully, the study shows some potential for ways of looking at the vocational education system which have here-to-for not been attempted. But it would be the extreme demonstration of egoism to pretend that this report will give any conclusive finding of any one of the three concerns - State management, delivery systems, or effectiveness, much less a conclusive set of findings on the interrelatedness of all three.

It was well known when this study was proposed that in dealing with three dimensions, each of which is terribly complex--gross generalizations would have to be made, each concern treated with marginal considerations and necessarily to compromise important concerns.

The study grew out of an increasing concern that as vocational educators we have seldom attempted to look at the "gestalt." We have had some excellent reports, and extensive data on both the State department organization and functions, and upon the output (the students). There has been less attention paid to delivery systems, but data was available, or could be obtained, and certain generalizations were made about delivery.

It will be apparent to the reader that this study has capitalized upon what is already known. The thrust has been to try to interrelate this data. For persons deeply involved in the national picture most of the findings will not be new--hopefully the findings will support their observations. For others who have not addressed the issue of "the system" these findings should give new insights into the forces working within vocational education which effect its output.

The frustrations of conducting the research were many. Any one of the three components is extremely complex. To delimit each component to its basic units, and make them compatible with each other took more time than expected. The variables eventually used were probably predictable, but the search for other variables had to be conducted. This took an unexpected amount of time, reviewing literature, sifting data, testing relationships, trying to accommodate information from a variety of sources, and cross-checking information from a variety of sources. These activities are not reported here. Dozens of attempts to achieve reliable variables were made and the results discarded. What finally materialized were, and are traditional kinds of data and information.

We hope the reader will appreciate that one of the important findings is that from all the sifting and winnowing, the traditional basic variables emerged as the ones to be used in this study.

There are, as with any study, so many people to thank. There are those unheralded people who took important time to complete complex questionnaires; a wide variety of formal and informal consultants.

But the basic work was done by a persistent and frequently frustrated staff. Mrs. Gertrude Ogushwitz, the project manager, established the direction of the project, but because of personal circumstances had to leave the project before its completion. Dr. John Salas stepped in and fought the project through to its completion. The assistants on the project were Frank Smith, James Shea and Mrs. Claire Mcgowan. Mrs. Jean Kappers, project secretary performed above the usual expectations of a secretary by maintaining a stabilizing influence and, of course persisted in the production of the final product - this report.

CHAPTER I

INTRODUCTION

How does one best organize a State to provide for maximum vocational education services?

The title of this study suggests the answer to that question will be forthcoming. No one would be happier than the researchers if such were the outcome, but it is only an illusion.

The study grows out of the increasingly apparent need to do better planning so that the maximum productivity can be achieved with finite dollars. The need was probably most clearly articulated by the G.A.O. report (1974) which raised serious questions. That report addressed itself primarily to administrative processes, rather than the end product. The primary concerns were:

1. the role of the federal dollar
2. how vocational education is planned
3. how the federal vocational funds are distributed
4. how training resources are used
5. the relationship of training to employment.

Among the major concerns was the observation that "information is inadequate or unused" and that there is "under use" of data.

That report is only one call for some improvement. Several States have either been required, or feel a need to at least "look" at their vocational education structure. At the moment two States are known to be developing long range plans for the future development of vocational education, Connecticut and Missouri. Tennessee only recently underwent an extensive self analysis.

Another important indicator of the need for broad study of the "system" is inherent in the proposed federal legislation (S2657). It calls for a stronger planning component. Some amendments have even proposed the development of a planning body in each State.

But planning cannot be done without data. There is, as noted in the GAO report, a substantial amount of data about vocational education available. The USOE has accumulated State reports with masses of data each year since 1917. It has issued a great variety of reports. These have, for the most part been in a descriptive, or tabular form. Other national studies - several of State departments, several of students, have brought forth an impressive variety of useful information. Probably the most significant publication with impressive statistics and analysis is being issued by Project Baseline, directed by Dr. Richard Lee out of the University of Arizona.

There did not however, seem to be any studies which attempted to look at State and local operation to see how and if they interrelated in any way.

The undertaking of this study was known to be presumptous - that a study with limited finances, staff and time could ever bring together a "total" picture of vocational education in the United States.

The Problem

It is the character of the nation, of fifty sovereign States and dependent territories that each is unique in a variety of ways. While States may have common programs - each State has a system of educating its citizenry, each has unique aspects. The way in which a system is organized, operated and produces is determined by each State to meet special needs and done in the way deemed best by the people of each State.

Vocational education is a part of each States educational program. While there are generally agreed upon definitions for vocational education of what the program is, common procedural expectations, and a generally agreed upon output, no two States operate in the same way. Some commonalities are: 1) each State must have a State board of vocational education; 2) each State will provide services at the high school, post-high school and adult level, as well as special programs and special categories of people (special needs); 3) students will be trained for employment or upgraded in their occupation. These and other common generalizations result from federal laws.

But given these commonalities, each State adapts them to its own perceived needs. The generalities are satisfied in distinctly different ways by each State. Only in the most general way can we say that there is a federal vocational system. Even within a State it is inaccurate to say there is "a" State system, or if there is, there are a variety of subsystems. Every State utilizes a variety of subsystems; the public high schools, community colleges, technical colleges, correctional institutions, even some special schools variously labeled vocational schools, technical schools, regional technical schools - specifically for vocational education, among other systems.

One of the existing dimensions of vocational education in America is that even within the bounds of rather clearly defined parameters there can be so much contrast!

Yet we persist in generalizing the process and the output. There have been few attempts to look at the diversity. It is the thrust of this study to be descriptive of the diversity as well as analytical on terms of the general impact of the diversity.

Purpose of the Study

Planning

The utility of information is first, to help States, who must plan, to look at alternative structure and procedures in their relationship to output. It is perhaps commendable as well as exciting that each State functions in its own way; to respond to its own needs. Yet there does need to be a data base which will identify alternatives, particularly if it can be shown that certain practices, structures or systems seem to be more productive than others. Just as there is a wide exchange of curricular material between and among States, there needs to be an exchange of organizational information of procedures, structure and systems which can be adapted or modified for continually better performance.

A Response

A second reason is that there have been serious charges brought against vocational education, the most prominent one being the General Accounting Office report (1974). To a large extent the findings of that study appear to be subjective. Besides, the findings were based upon a review of a few selected States which may or may not have been "representative." While this study is not intended to refute the findings it may indicate that generalizations of that type are dangerous in light of the great variance which exists between States.

Attempt to Systematize Study

Thirdly, the GAO report and the report of the National Advisory Committee (1969) among others indicate that there is no systematic way of looking at vocational education data which will give a clear picture of its dimension, its importance, its strengths, or its weaknesses. This study does not answer these questions but is an attempt to develop a possible way of looking at vocational education data in an analytical and useful way.

Data Reporting

Fourthly, a most distressing problem is that federal reporting requires data associated with the expenditure of federal funds. This results in a gross under-reporting, for not all vocational education in any State uses federal funds. A practice in recent years has been to utilize federal funds for "seed" money. Programs are started with federal funds, but these funds are gradually withdrawn until the programs are self sustaining. At the point of self support, the programs may no longer be included as a part of the federal data base.

Finally, as this report is being written, new federal legislation is being introduced. A major concern in the development of this legislation is the basic administrative devices to be used in the distribution and maintaining of the federal funds. Without attempting to analyze all the concerns it should at least be noted that various alternatives to a "State board" are under consideration.

There is virtually no data available to support the need for such a major change. Nor is this study meant to defend its continuance. This study may give some insights into the need, or lack of need for such a change.

This report is merely a start. Vocational education must look at a broad picture of "what is." From this it is possible to project what should, or at least what "could be."

Data

Variables

Three major variables are the basis of this study: 1) State administrative structure, 2) delivery systems and 3) effectiveness or output. The attempt is to look at certain elements of each of these three dimensions to try to ascertain whether there are interrelationships which can be identified.

The three variables are each extremely complex, so obviously all the components of each could not be identified, much less measured. The attempt was to identify certain components of each variable which were common to each State, for which data was readily available, or could be generated, and have been identified as having some potential of influencing, or being related to the output.

The dependent variable is "The Relative Effectiveness." This was viewed in two dimensions: 1) the quantity of service, and 2) the quality of service. Quantity is defined in terms of enrollments at three levels: high school, post-high school and adult, and types of categories--handicapped, disadvantaged. Quality is defined in terms of completions of programs, and placement into occupations for which students were trained or in related occupations. These dependent variables were selected on the assumption that a vocational system should service as many students as possible, in a variety of ways and ultimately place them in appropriate occupations.

The researchers are aware that these are not the most precise measures of quantity and quality. First, there are problems with quantitative reports. All students in "vocational programs" may not be reported. Secondly, the definition of placement is at best hazy. Thirdly, placement does not recognize the extent of skill acquired by individuals. But in dealing with gross data, as it is collected it is the best one can deal with.

Data Collection

Statistical data used for the study was narrowed down to primarily Project Baseline data, though several special pieces of information came from other sources. Baseline data was compared to similar information from USOE. It seemed more comprehensive and was presented in a greater variety of ways. In addition, consultation with the director of the Baseline data project confirmed that the data had been very carefully developed, to the point where visitations to States plus numerous telephone calls and conferences had been conducted for verification. Much of what was perceived would have to be done in this study had already been done by the Project Baseline staff.

Efforts were made to draw data from State plans. All but three States submitted State Plans for 1970-71 and 1972-73. These were reviewed and certain data was extracted, but in general the information in the plan was unusable. State Advisory Committees were asked to submit annual reports. Some exceedingly interesting reports were submitted but since there was not consistency of content, there was little that could be drawn from them.

Because there was no single source of information which described delivery systems with the kind of information desired in the study, an effort was made to generate a delivery system data base. A questionnaire was developed and pretested. It was then distributed to the States. Forty-two States returned the questionnaire of which only 39 were usable for certain statistical data. Care was exercised to avoid having States develop a whole new set of statistics. But several States felt they would not be able to satisfactorily reply. Efforts to get complete data included follow-up letters and telephone calls.

Because the data was to be primarily descriptive it was felt that a one hundred percent response was not necessary. There would be a broad demonstration of most alternative delivery systems.

Data Treatment

A wide variety of potentially useful data was identified by the staff. Considerations had to be made in the selection of the variables to be used: 1) was there good reason to believe that the variable would interact with other variables? 2) was the data describing the variable reliable enough to be used? 3) did the data associated with the variables lend itself to statistical treatment? 4) was the data reported on a consistent base which would permit treatment?

Using these criteria there still remained a substantial number of variables to be evaluated. Considerable numbers of statistical procedures were used to further delimit the variables to be used. There could, of course, be a wide variety of special treatments given to data in different ways. But when one is dealing with a relatively small sample (50 States) and there is missing data, the number of variables had to be reduced to a usable number.

Considerable concern was constantly felt about the reliability of the data. Data such as enrollment figures for example are known to differ significantly from State to State. They are based on different definitions. Different distribution formulas used by States would result in expenditure data which would differ one from the other. This, plus the fact that States differ considerably in their populations required some careful attention.

To accommodate these and other problems several techniques were tried. The final procedure used was to develop a "change" figure. The procedure is outlined in Chapter IV.

Special Concerns and Limitations

Data

As previously mentioned, the data was a considerable problem. Some more obvious limitations are listed here:

1. The U. S. Office of Education has established certain data expectations. These include descriptive reports which could be useful if they were systematically analyzed and reported, but which have the severe limitation of being virtually entirely subjective.

2. Data which is accumulated is based upon enrollment, completions, number of teachers, schools, and a variety of financial data. Since each State has its own definitions of each of these, raw data is not comparable. For example, one State may have trade and industrial students enrolled in four-year programs, another only reports a "cap-stone" program - the last year of enrollment in a trade and industrial program. The accumulation of such diverse data is clearly misrepresentative.

3. Financial data is not consistent from State to State. While the expenditures of federal funds may be fairly accurately reported, it is virtually impossible to deal effectively with State and/or local funds. If vocational programs are provided in a comprehensive high school or community college, funds are comingled, particularly those dealing with facility utilization, administrative costs, special services, etc. No two States, perhaps not even two schools report in the same way unless it is a "vocational school" and all cost, enrollments, etc., are clearly defined. State and/or local expenditures are not consistently reported.

4. Completion rates, are misleading. Is it one course? a sequence of courses? a sequence of years? Each State establishes its own definitions.

5. Placement figures are particularly distressing to deal with. How the data was gathered, what is each State's definition of placement, and how consistent it is with manpower needs are only a few more obvious questions. These all vary so from State to State that it is virtually impossible to use raw data on a comparative basis.

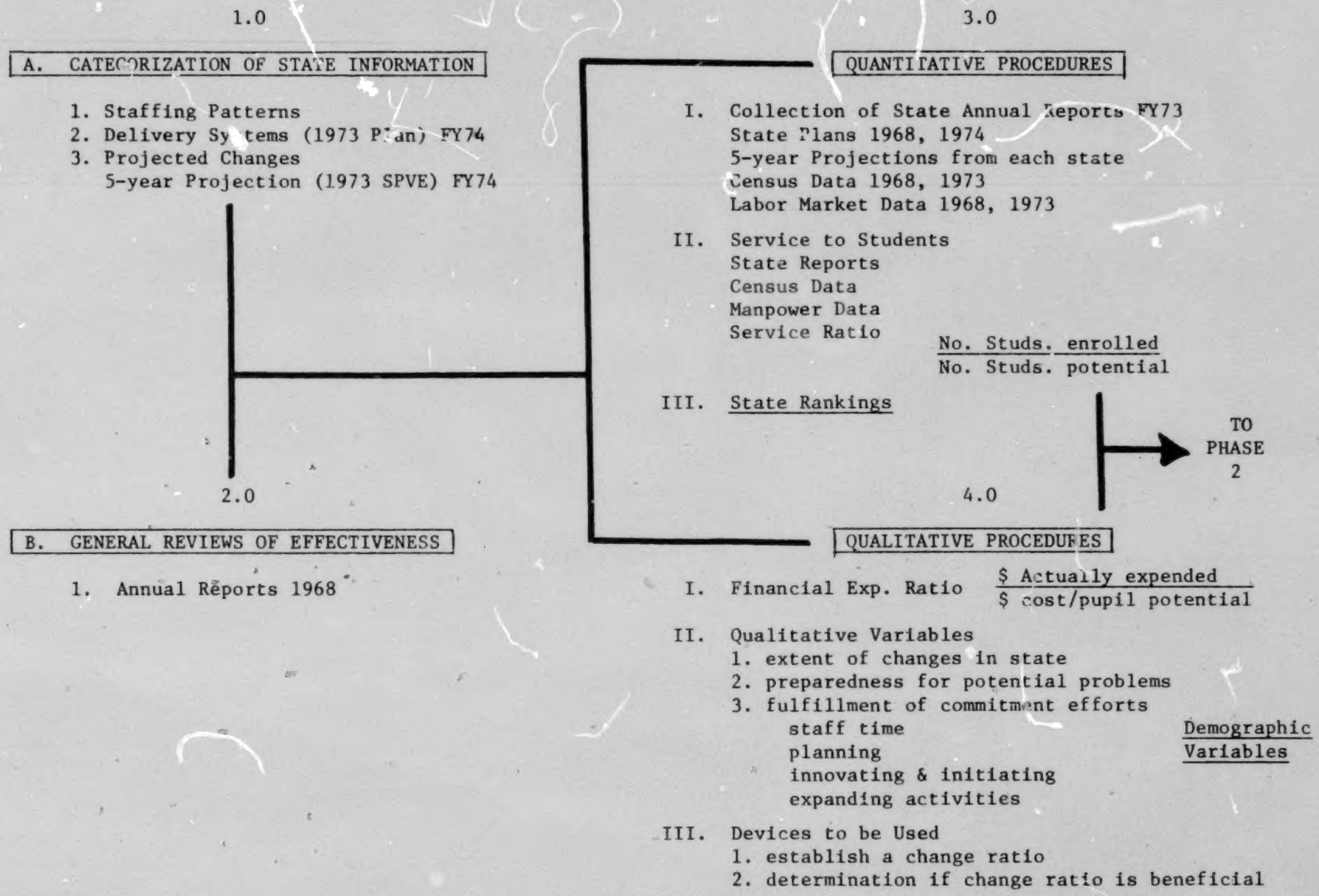
6. Data regarding State staff organization and function is just as unclear. Line and staff information is reported, but the intervening variables are not differentiated.

7. Worst of all is the data defining delivery systems. State plans describe schools, facilities, staff - but there is no attempt to systematize a reporting system. The USOE definition of delivery system was found in this study to be quite inappropriate.

Study Procedures

The procedures used in this study are illustrated in Chart 1. Time expectations of each dimension were, for the most part, underestimated, thus a delay in the final report.

PHASE 1 PROCEDURES



1.0

A. CATEGORIZATION OF STATE INFORMATION

1. Staffing Patterns
2. Delivery Systems (1973 Plan) FY74
3. Projected Changes
   5-year Projection (1973 SPVE) FY74

2.0

B. GENERAL REVIEWS OF EFFECTIVENESS

1. Annual Reports 1968

3.0

QUANTITATIVE PROCEDURES

I. Collection of State Annual Reports FY73
   State Plans 1968, 1974
   5-year Projections from each state
   Census Data 1968, 1973
   Labor Market Data 1968, 1973

II. Service to Students
   State Reports
   Census Data
   Manpower Data
   Service Ratio $\frac{\text{No. Studs. enrolled}}{\text{No. Studs. potential}}$

III. State Rankings

TO PHASE 2

4.0

QUALITATIVE PROCEDURES

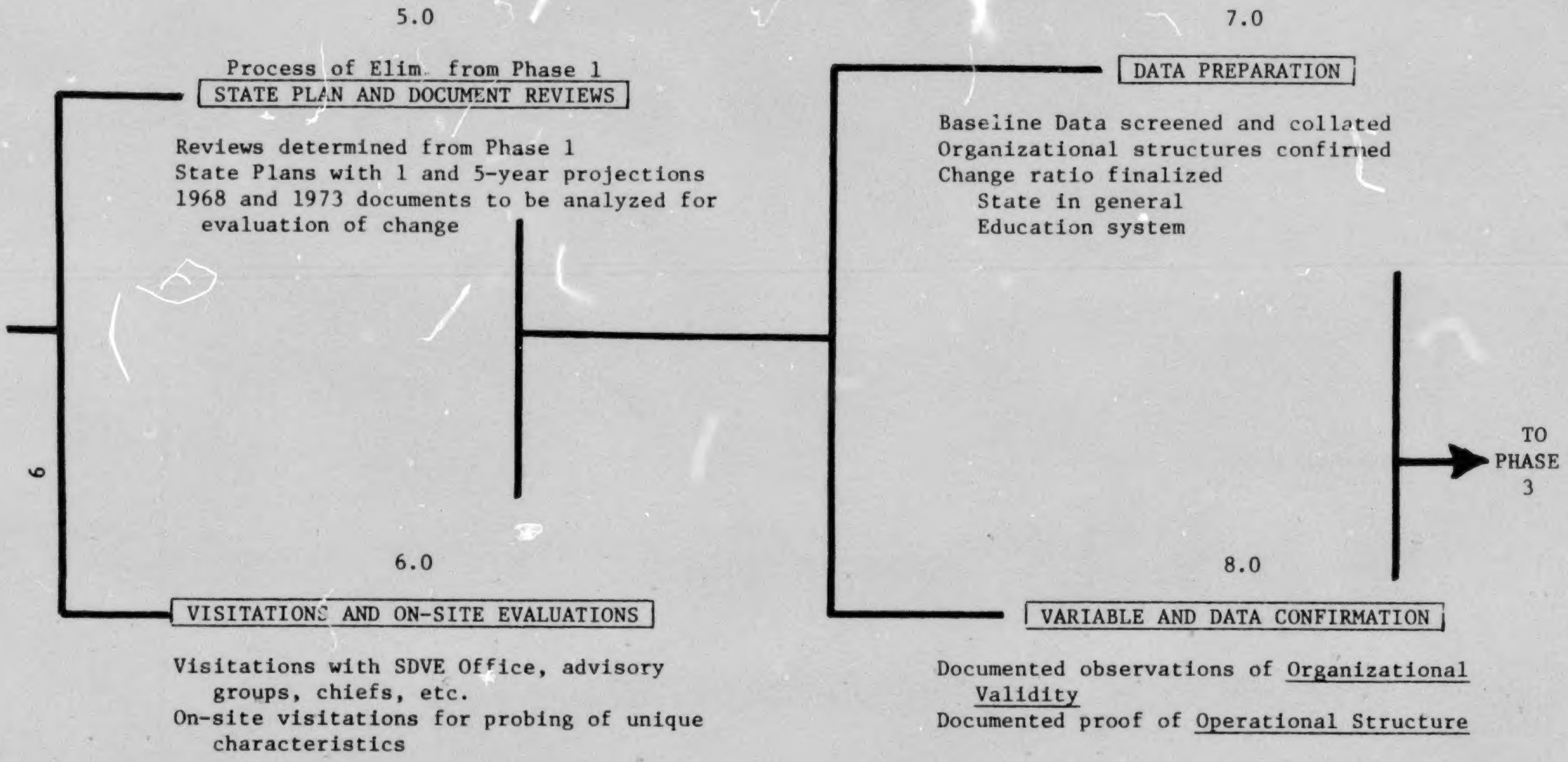
I. Financial Exp. Ratio $\frac{\text{\$ Actually expended}}{\text{\$ cost/pupil potential}}$

II. Qualitative Variables
   1. extent of changes in state
   2. preparedness for potential problems
   3. fulfillment of commitment efforts
      staff time
      planning
      innovating & initiating
      expanding activities

Demographic Variables

III. Devices to be Used
   1. establish a change ratio
   2. determination if change ratio is beneficial

PHASE 2 PROCEDURES



5.0

Process of Elim. from Phase 1

STATE PLAN AND DOCUMENT REVIEWS

Reviews determined from Phase 1
State Plans with 1 and 5-year projections
1968 and 1973 documents to be analyzed for evaluation of change

6.0

VISITATIONS AND ON-SITE EVALUATIONS

Visitations with SDVE Office, advisory groups, chiefs, etc.
On-site visitations for probing of unique characteristics

7.0

DATA PREPARATION

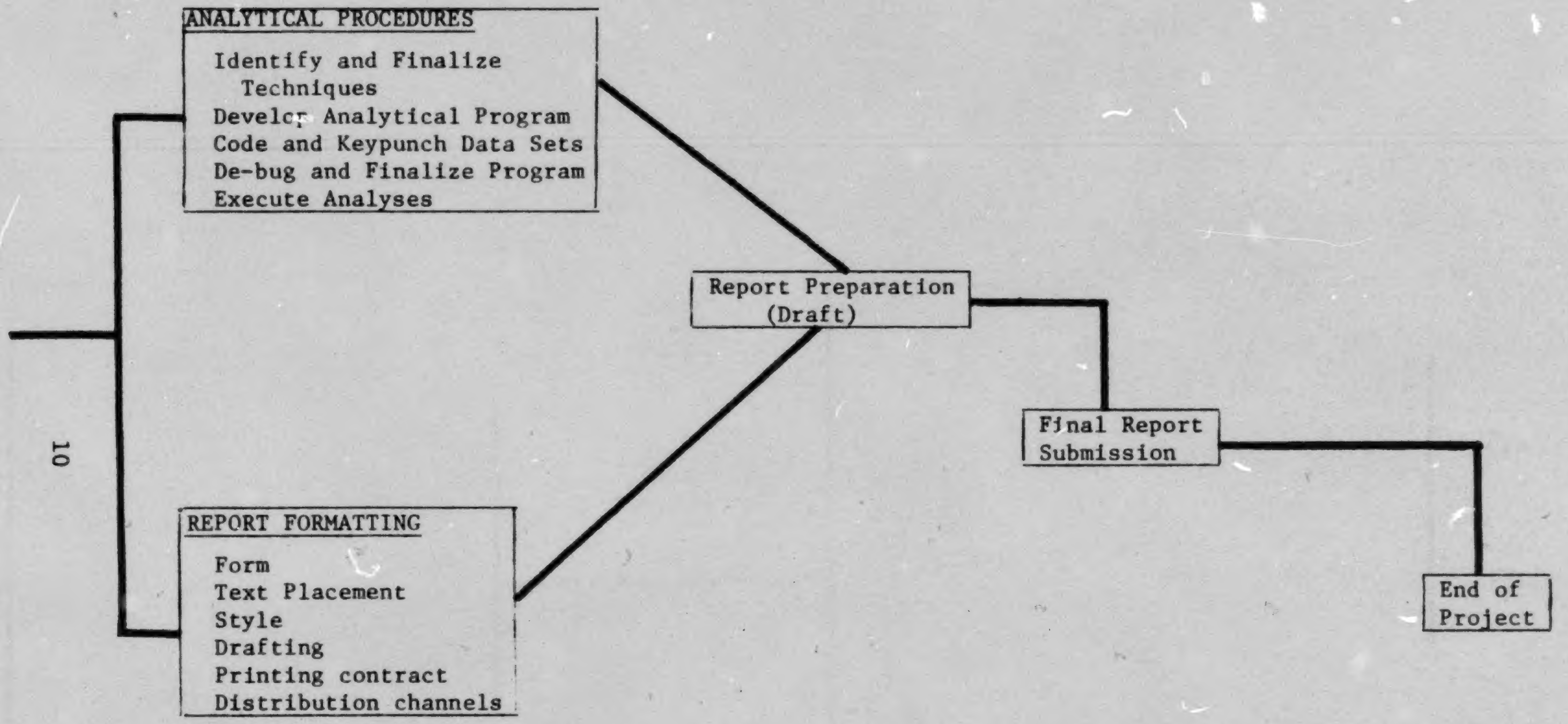
Baseline Data screened and collated
Organizational structures confirmed
Change ratio finalized
  State in general
  Education system

8.0

VARIABLE AND DATA CONFIRMATION

Documented observations of Organizational Validity
Documented proof of Operational Structure

PHASE 3 PROCEDURES



CHAPTER II

STATE ADMINISTRATION

Introduction

From the initiation of federally supported vocational education through its history, a major concern apparently has been how States would organize themselves to most effectively provide vocational education. This observation arises out of the fact that in the Smith Hughes Act of 1917 provisions were made that there be established in each State a Board of Vocational Education. There were obviously alternatives to the establishment of State boards of vocational education. Federal law could have permitted each State to assign the responsibility for the administration of vocational education to whatever board, agency or other structure they felt most appropriate, or the legislation could have provided for the designation of the chief State school officer to be the custodian of the funds and to distribute them through whatever administrative vehicle was provided in the State. Another alternative might have been a direct grant-in-aid program.

Examinations of State department of education literature exhibits three levels of vocational education management which forms the basis for review: 1) State boards of education--SBE, 2) chief State school officer--CSSO (in most States), 3) State directors of vocational education--SDVE. Other variables such as State aid formulas, legislative mandates, distribution of federal aid and other similar variables were standard but proved to be too elusive to permit their use.

State Boards of Education

Background

A brief history of the evolution of State departments of education was found in State Departments of Education, State Boards of Education and Chief State School Officers. (Harris: 1973) He reports:

State departments have evolved through three stages:

1. Pre-1900-primarily statistical, primary thrust was gathering, compilation and publication of educational statistics, and the disbursement of State financial assistance.

2. 1900-1930, inspectoral stage-data collection augmented by regulatory functions and enforcements of standards.

3. 1930- less concern with enforced regulations and controls and more with providing leadership in planning and technical assistance to bring about educational improvements.

In 1900, 34 of the 45 States in the United States had individual officials responsible for a State educational system. As of 1973, the number of such officials had decreased to one (Harris: 1973:53). In 1968, 45 State boards of education were also State boards for vocational education. Five States reported independent vocational education boards (Swanton: 1968). In 1973, ten of the 55 State boards of education (includes Puerto Rico, Virgin Islands, Trust Territories, American Samoa, Guam and District of Columbia) had independent State vocational boards (Table 1).

Harris reported certain administrative problems were created by boards with more than one executive officer and with more than one purpose over State education systems. He states: "State boards of education operation of institutions such as vocational schools, special schools for handicapped, junior and community colleges, and colleges and universities occasionally has caused sensitive relationships among the chief State school officer as the executive officer of the governing board, departmental staff and the administrators charged by the board with the operation of educational institutions."

In addition to organization patterns, it was further reported that several noticeable trends were occurring with respect to the roles and functions of State departments: 1) more comprehensive planning, 2) increasing evidence of coordination with related agencies, 3) new departmental approaches to research, development and evaluation: accountability, 4) general shifts in departmental orientation and 5) general changes in staffing and departmental size. In spite of these trends, State departments were also found to be experiencing difficulties in: 1) staffing problems, 2) low support levels, 3) organizational and legal constraints and 4) political realities.

State board of education appointment usually by the governor with approval of one or more houses of the legislature has continuously increased from three in 1896 to 28 in September, 1972.

One can hypothesize that the constituency of that board will influence vocational education. Such constituency will be affected by how the board is selected, by election--(partisan, non-partisan) by appointment, or by virtue of office held.

There are some intriguing potential imbalances which can result from any one of these three methods of selection. Does partisan election result in a high level of political party influence on education in general and vocational education in particular? Does non-partisan election in fact offset party influence? More particularly, does one or the other give any assurance of greater competence in dealing with vocational education?

The issue may be "how best to remove education from partisan politics." But of interest in this study is whether one or the other of these processes results in a board constituency which is more responsive to vocational education than the others.

It is a tricky question since universally, State boards of education have over-happing constituency, that is, terms of office are staggard so that in theory in no one year can a majority be elected or appointed (but exceptions do arise). Theoretically, this gives balance to the constituency - the members may have political allegiances but the balance of power shifts from time to time.

The Chief State School Officer (CSSO). In a comprehensive analysis of the chief State school officer, Harris reports that the position referred to as "chief State school officer" is present in every State by virtue of constitutional provision or State statutes. There are a variety of titles applied to these positions: 1) commissioners of education--18 States, 2) superintendents of public instruction--23 States, 3) superintendents of schools--four States, 4) superintendents of education--three States, 5) superintendents of public education--two States, 6) directors of education--four States and 7) secretaries of education--two States.

In most States, the CSSO's primary functions consist of: 1) serving as executive officer of the State board of education, 2) administrative head of State departments of education, and 3) chief administrative officer of the State for executing the laws, rules and regulations relating to education as determined by State constitution, statutes or State board policies.

There are three methods in which the CSSO is selected: 1) election by the people, 2) appointment by the State board of education, 3) appointment by the governor. Harris found during the first two decades of the 20th century, there were two additional selection methods in use--appointment by the State legislature and appointment by ex officio designation. These methods were used by a few States but ceased after 1919 because of inherent weaknesses.

In regard to CSSO's who are selected, Cambell *et al*. (1965) states:

> "...In those States where the chief State school officer is elected by popular ballot, there is often confusion between the basic responsibility between the State board of education and the State superintendent of public instruction. In States where the State board of education selects its own chief executive this confusion does not exist."

They might have added, that where there is a governor-appointed chief State school officer, confusion of responsibility can exist, particularly if the board is elected. Where governor appointed chief State school officers exist there may be frequent changes of personnel resulting in a lack, or lessening of program and policy continuity.

TABLE I

THE STATE BOARD OF EDUCATION (SBE): 1972[1]

States having a SBE for the State system of education	Elected by people or representatives	by the Governor	Ex officio	Term in Years	SBE is Board for Voc Ed
Alabama	Partisan	-	-	4	Yes
Alaska	-	X	-	5	"
Arizona	-	X	-	4	"
Arkansas	-	X	-	0	"
California	-	X	-	4	"
Colorado	Partisan	-	-	6	No
Connecticut	-	X	-	6	Yes
Delaware	-	X	-	3	"
Florida	-	-	X	4	"
Georgia	-	X	-	7	"
Hawaii	Partisan	-	-	4	No
Idaho	-	X	-	5	Yes
Illinois	Undetermined-to be decided by Illinois General Assembly			Undet.	Undet.
Indiana	-	X	-	4	No
Iowa	-	X	-	6	Yes
Kansas	Partisan	-	-	4	"
Kentucky	-	X	-	4	"
Louisiana	Partisan	-	-	8	"
Maine	-	X	-	5	"
Maryland	-	X	-	5	"
Massachusetts	-	X	-	5	"
Michigan	Partisan	-	-	8	"
Minnesota	-	X	-	6	"
Mississippi	-	-	X	4	"
Missouri	-	X	-	8	"
Montana	-	X	-	8	"

TABLE I - Con't.

States having a SBE for the State system of education	Elected by people or representatives	by the Governor	Ex officio	Term in Years	SBE is Board for Voc Ed
Nebraska	Non-part.	-	-	4	Yes
Nevada	Non-part.	-	-	4	"
New Hampshire	-	X	-	5	"
New Jersey	-	X	-	6	"
New Mexico	Partisan	-	-	6	"
New York	Legislative	-	-	15	"
North Carolina	-	X	-	8	"
North Dakota	-	X	-	6	No
Ohio	Non-part.	-	-	6	Yes
Oklahoma	-	X	-	6	No
Oregon	-	X	-	7	Yes
Pennsylvania	-	X	-	6	"
Rhode Island	-	X	-	4	"
South Carolina	Legislative	-	-	4	"
South Dakota	-	X	-	5	"
Tennessee	-	X	-	9	"
Texas	Partisan	-	-	6	"
Utah	Non-part.	-	-	4	"
Vermont	-	X	-	6	""
Virginia	-	X	-	4	"
Washington*	*	-	-	6	No
West Virginia	-	X	-	9	Yes
Wisconsin	No State board for public elementary and secondary education				
Wyoming	-	X	-	6	Yes

* Elected by members of boards of directors of school districts within their respective congressional districts.

[1] Adopted from Harris, Sam P., State Department of Education, State Boards of Education and Chief State School Officers, U. S. Government Printing Office, Washington, D.C., 1973. Table 3, pp. 60-61.

Gubernatorial appointments of the CSSO were used by 18 States from 1900-1972. At the end of that period, five States continued to use this method. Twenty-six States had CSSO appointed by the State board and 19 were selected by election (including only the 50 States). Advocates of the gubernatorial appointment method contend that a chief selected in this manner would receive the full support of the State administration, thus facilitating the coordination of education with other agencies. Critics maintain that a dependence on this procedure could result in the amount of attention paid to education being adversely affected because of the strong political overtones. Additionally, such appointments were seen to weaken the authority inherent in the legal policy-body, the State board of education. Thus the trend to move toward the appointment by the board.

In spite of the variety of selection methods employed to select the CSSO by the States, the CSSO still serves as the executive officer for the State boards of education. In States where the State board of education also functions as the State board for vocational education, an implication as to the priority and attention to vocational education is raised; i.e., vocational educations relationship as a unit within the State department. There is an implication that that relationship has an effect on the potential strength and control which a State director of vocational education has over the vocational system for which he is responsible.

State Board of Vocational Education

Significance

Federal legislation does designate that there should be a State board of vocational education. The only caveat that was provided was that it did not have to be a board uniquely designed for vocational education. In fact what happened was that most States designated the State board of education as the agency for the administration of vocational funds. These boards were designated as the States board of vocational education as well as State boards of education. They were carrying out what could be conceived as dual functions. This choice seemed logical since most vocational education was being offered in the secondary school which already came under the perview of the State boards of education.

The designation of having the State board of education serve also as a State board of vocational education has continued from 1917 and is still the prevalent controlling board for the administration of vocational education.

There have been some exceptions to this. Some States did not have State boards of education and therefore were required to establish a State board of vocational education.

Other States over a period of years have opted to develop separate State boards for vocational education. In 1973 there were five such boards, one of which was operating in a State which did not have a board of education. The other four therefore had both a State board of education and a board of vocational education.

Regardless of how a State organized itself to administer federal funds the fact remained, even today there is a requirement that each State have a board responsible for the administration of vocational education. The importance of this fact is that regardless of how States designated the board for vocational education there was, and is a single agency responsible for receiving, controlling and dispersing federal funds on the basis of rules and regulations established by the federal government. In a sense, the State board for vocational education became a kind of extension of the U. S. Office of Education (earlier, of the National Board of Vocational Education). Despite the disclaimer in vocational legislation of "federal control," the influence of the law has been to create a pseudo "National Vocational Education System." Under the various categorical programs cited in legislation, States are forced to conform to a "pattern" of distribution of funds, with rather rigid programmatic areas--and then "match" federal funds, with local and State funds. Actually federal funds run 20% or less of the total reported costs for vocational education. The federal government effectively influences the form, structure and processes of each States vocational system through the State boards of vocational education.

Use Within This Study

Since each State has a designated administrative unit, operating under clearly defined categories, it would seem possible to look at these agencies to see first of all how they are structured, and secondly to categorize these structures in such a way that one could determine whether there were unique characteristics of the structure which contributed to the development of vocational education.

This seems particularly appropriate for study today. Since the passage of the Vocational Act of 1963 the range of vocational education programs has vastly expanded. Where it once was primarily a function of secondary education, it has now expanded to include post-secondary and adult education through a variety of institutions. A serious question arises from this dispersion. Can a board of education primarily responsible for elementary and secondary education establish effective relationships with other State agencies administering other institutions qualified to offer vocational education?

The 1963 Act was responding to a perceived need of a greater variety of people, at multiple levels, across a broader spectrum of programs than had been in existence in 1917. How have State agencies responsible for vocational education adapted to meeting this broader challenge? This question is explored later.

Expanded Scope of Vocational Education

Because of the increased scope of vocational education in: 1) the variety of programs offered, 2) the levels of those programs, 3) the increased diversity of clientele, 4) the expansion of supportive services and 5) the diversity of associated agencies, State departments have been forced to expand staff, double staff assignments, rely on other agencies for special help, reorganize, reduce their services--any one or any combination of these.

Federal legislation has attempted to assist States in meeting the federal goals by increasing specificity of a number of items including: 1) the make-up of an advisory committee, 2) clearer definitions of special needs, 3) special set-aside money for post-secondary education and students with special needs, 4) expansion of exemplary programs, and 5) expansion of leadership training and a variety of other devices to help achieve the goals.

States have been responsive, but have had difficulty in adjusting their activities to successfully attack all the charges given to them. Many States unhappy with the federally required five-year plans have or are conducting studies, internally, nationally and internationally, to discover the most acceptable ways to maximize success in the multiplicity of vocational education goals set before them.

It seems probable that with the changing goals, that present administrative structures are having increasing difficulty in achieving goals as set forth in federal legislation. A simple example of this is how vocational education, if administered through a board of education, can effectively provide for post-secondary education across the states, particularly where there are other State boards which may be responsible for community colleges or technical college programs. The problem has not been addressed in any empirical way.

Other Factors Affecting State Administration

Administrative theories would support the notion that a wide variety of variables, some specific, i.e., the character of the most prominent vocational education leader (the measure of an institution is the length and breadth of the shadow of a man) and some general in character, i.e., the span of control, as the important elements in achieving effective output.

Administration of any agency or institution is a highly complex set of interactions. The feasibility of studying all these interactions is not possible. Such variables as "personal interaction," "communications network," "distribution of power and authority," require the collection of specific measurable data, not readily obtainable from State departments of vocational education.

Structures of State departments are effected by many concerns. The size of the State influences the size of the staff and the organizations of a department. The variety of institutions providing vocational education also effects size and organization of a State department. Relationships to other State organizations, the interactions between departments within a State board of education, State legislative mandates,--all of these and other factors impinge on the size, organization and processes of a State department of vocational education.

The result is, of course, that no two States have similar structures, similar scope of work, similar distribution of responsibilities, or similar organization.

As already indicated, one cannot possibly study all possible interactions. The fact is that the administrative expectations of State boards has expanded along with the program expectations.

Granted that some of the components of effective administration can be measured through such variables as were studied by Swanson (1967) Kobel (1972) and Rice (1965) there are some larger concerns.

One cannot assume that such critical items as mentioned above are randomly distributed, or have such little variance that they can be assumed to be common across all States. Rather it is contended that there are variables which supercede these.

State Board of Vocational Education Structure

While administration may be viewed as a process, in which case it concerns itself with communication, personalities, modus operande, etc., fundamentally these items are influenced by authorized power, as set forth in the creating and enabling legislation of each State. This authorized power appears to be related to: 1) the authority given to a State board of vocational education, and 2) the level at which the vocational staff is placed in relationship to the policy-making board.

The latter of the above is the variable used in this study. It is hypothesized that when one administrative function is subservient to another, that less administrative leadership will be given to the subservient responsibility than to the major responsibility. This occurs when there is a board of education serving as a board of vocational education. On the other side, boards which have vocational education as their sole or major responsibility will be more responsive to the vocational program, permitting, even directing more effective vocational education, or at least in different ways.

State Director of Vocational Education

Swanson (1969) alluded to this as one important dimension of State structure which would possibly impinge on the output of vocational education. The level of the department of vocational education to the policy-making group is exemplified by the relative position of State directors to the policy-making body - that is, the State board of vocational education. Among other functions it was Swanson's contention that the further removed a State vocational director was from the policy-making board the lower the per-student cost of vocational education.

He also found that States in which the State director reports directly to the State board, there is a greater emphasis upon adult education than secondary education. It was also found that there was a lower percentage of secondary (9-12) pupils enrolled in vocational education and a smaller increase in total vocational enrollments under separate boards. In general, independent State department of vocational staff members related to a greater number of schools than did State department staffs subservient within a State board of education.

In 29 States the State director reports to a superintendent. The total enrollments appear to be more balanced between secondary, post-secondary and adult programs than in other States. There also appears to be a slight tendency toward the use of increased local funds for vocational education than in other States.

In 14 States where the State director reported to an assistant or deputy commissioner, there was a secondary-level vocational emphasis. Vocational enrollments at the secondary level increased much more than in other States. State department vocational staff in these 14 States were found to be related to a greater number of vocational teachers than in other States.

It appears that the hierarchal position of State directors of vocational education is related to the programmatic emphasis of vocational education delivery systems. Swanson's (1969) investigation only examined this limited facet, thus exhibiting a need to determine whether hierarchal position in concert with other variables is a potential predictor for system effectiveness.

This study hypothesizes that a specific combination of State administrative structure may produce useful predictors. For example, are systems displayed in the following patterns (Charts 2-5) related to different outputs?

The five structures might be illustrated as follows:

Chart
1

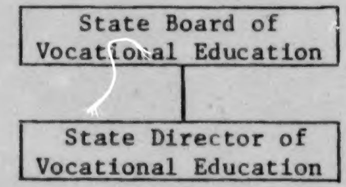

State Board of Vocational Education
State Director of Vocational Education

Chart
2

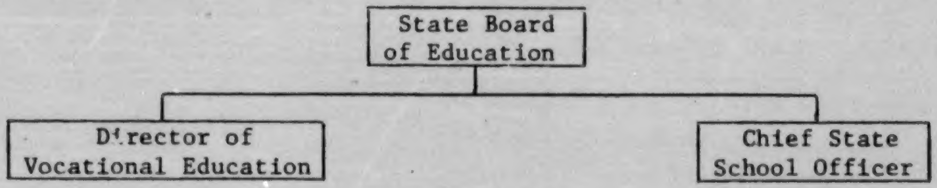


Chart
3

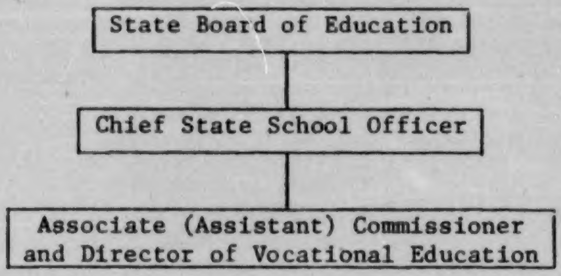

State Board of Education
Chief State School Officer
Associate (Assistant) Commissioner and Director of Vocational Education

Chart
4

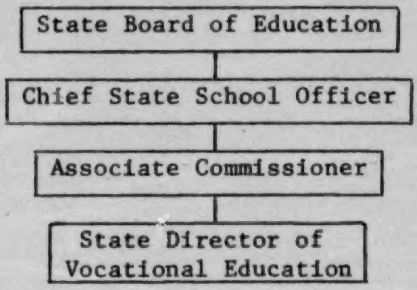
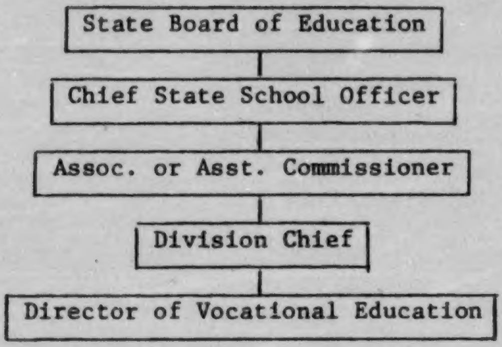

State Board of Education
Chief State School Officer
Associate Commissioner
State Director of Vocational Education

Chart
5


State Board of Education
Chief State School Officer
Assoc. or Asst. Commissioner
Division Chief
Director of Vocational Education

The Hierarchal Position

In Table II, there were nine (18%) States in which the State director of vocational education responded directly to the State board for vocational education (extracted from Swanson, 1969). This included the five States shown earlier to have independent vocational boards and four additional States in which the vocational unit has a staff rather than line authority. Twenty-three (46%) State directors responded through their CSSO while 18 (35%) responded through one or more deputy superintendent of instruction.

TABLE II

THE HIERARCHAL POSITION OF RESPONSIBILITY OF THE STATE DIRECTOR OF VOCATIONAL EDUCATION TO THE STATE BOARD OF CONTROL (SBVE)
N=50

	Director	Hierarchal (intermediary)	Position of State Director (2 or more intermediaries)
Alabama		X	
Alaska		X	
Arizona		X	
Arkansas		X	
California			X
Colorado	X		
Connecticut		X	
Delaware		X	
Florida			X
Georgia			X
Hawaii			X
Idaho		X	
Illinois	X		
Indiana	X		
Iowa			X
Kansas	X		
Kentucky		X	
Louisiana		X	
Maine			X
Maryland			X
Massachusetts	X		
Michigan		X	
Minnesota		X	
Mississippi		X	
Missouri			X
Montana			X

	Director	Hierarchal (intermediary)	Position of State Director (2 or more intermediaries)
Nebraska			X
Nevada		X	
New Hampshire	X		
New Jersey		X	
New Mexico		X	
New York			X
North Carolina			X
North Dakota		X	
Ohio			X
Oklahoma*	X		
Oregon			X
Pennsylvania			X
Rhode Island		X	
South Carolina		X	
South Dakota		X	
Tennessee		X	
Texas		X	
Utah			X
Vermont			X
Virginia		X	
Washington*	X		
West Virginia		X	
Wisconsin*	X		
Wyoming			X

*Separate State Boards of Vocational Education as of 1973.

State Vocational Staff Descriptions

Today, primarily through the Vocational Education Act of 1963 and its subsequent amendments, the list of administrative responsibilities has grown extensively, including the following, among other expectations:

1. conducting research
2. evaluating programs
3. certifying teachers
4. approving new programs
5. stimulating new programs
6. program planning
7. facility planning
8. developing, operation and maintaining professional development
9. implementing policies to provide services to special groups, i.e., handicapped and disadvantaged
10. stimulating and working with exemplary programs

11. working through and with a variety of agencies - departments of corrections, of labor, of community colleges, of welfare, of police, office services, and even propriatory schools, and in many instances interstate compacts
12. developing data and information basis and management systems.

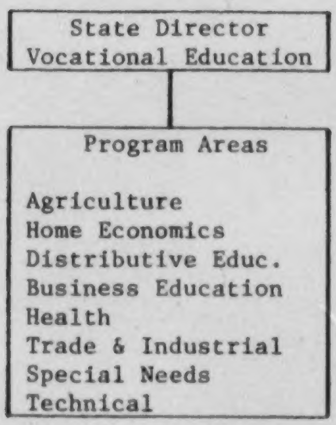
The list, an impressive expansion of responsibilities is still incomplete. One of the distressing concerns beyond accommodating these new responsibilities is that each has expanded the record keeping and reporting expectations. In addition to this list, most States vocational staffs have additional responsibilities. Some vocational departments actually operate vocational schools. Most are heavily involved in the CETA programs, some have the responsibility for all public school adult education, civil defense training, driver education, and other diverse programs. Where there are special State funds for vocational programming there are additional expectations in terms of program development, evaluation, accounting and reporting.

This has required a reorganization of vocational education divisions. It has required more attention to the mechanics of administration such as new communication networks within the division as well as with a wide variety of other organizations; the establishment of internal management techniques such as management by objectives, program planning and budget systems, time lines, and informational systems; professional growth of division staff.

States have addressed these problems in a variety of ways. Where States were once organized in rather uniform ways, generally by program areas with consultants in agriculture, trade and industry, etc., with each program area conducting its own leadership development, curriculum development, evaluation, supervision and program approval, the situation has changed greatly.

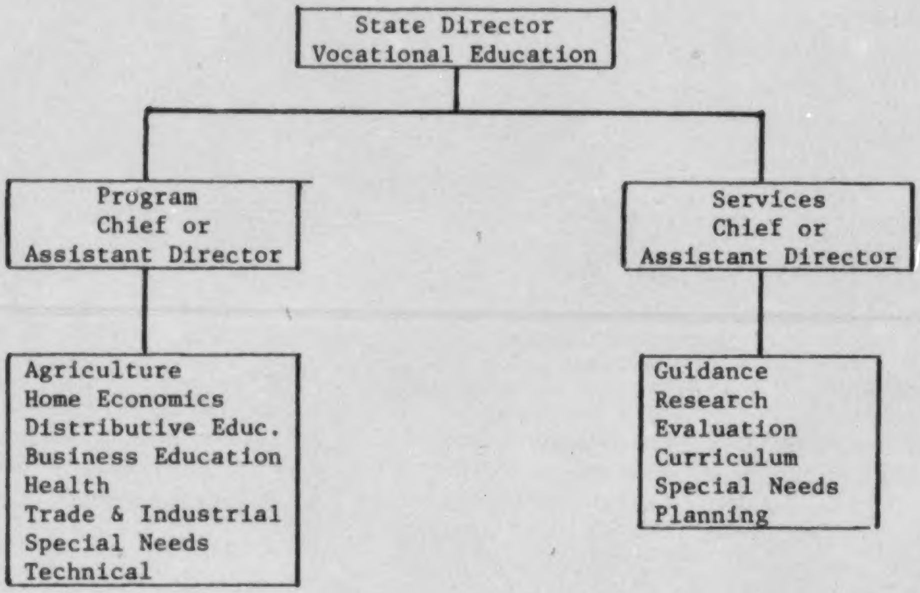
Now departments are organized in a variety of ways. The basic concerns effecting reorganization seem to be: 1) planning, 2) program development, 3) program servicing, and 4) administrative control. The patterns which emerge to accommodate these four functions vary, depending upon: 1) the size of the State (and the program), 2) the diversity of delivery systems, 3) the interactions a division may have with other State department services (a central accounting unit, a separate division for planning, etc.). Four generalized organizational patterns of vocational divisions are as follows: (Examples are set forth in Appendix A)

1



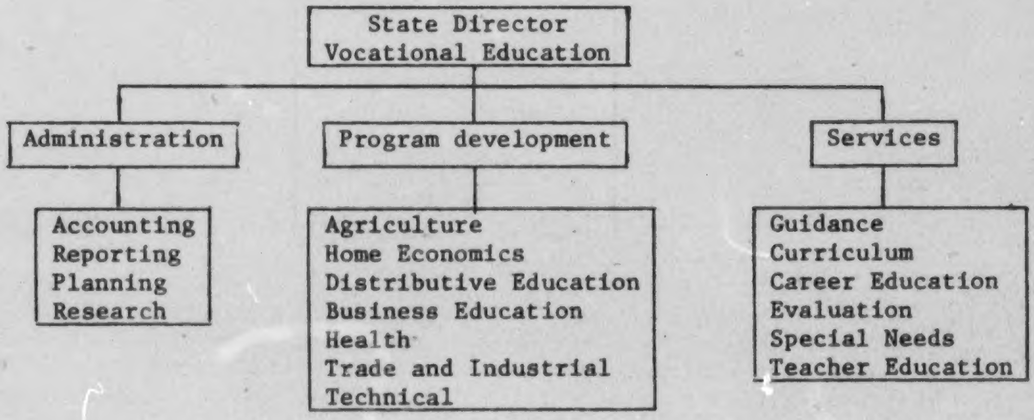
In this case, each program area conducts all aspects of administration; planning program development, approval, evaluating record-keeping, research, professional development, etc. For the broad State division responsibilities such as writing State Plans, financial accounting and reporting, these are usually done through special assignments and/or through cooperative staff activities.

2



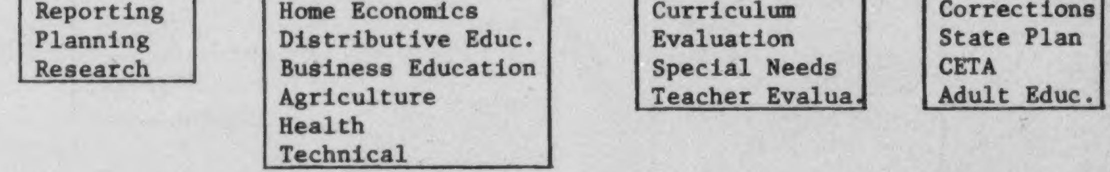
Here again, the broader State functions are a "team" effort. The bureau chiefs bring the expertise of their staffs together to accommodate activities which are not programs or service oriented.

3



In this case, the responsibilities are distributed more broadly. The administrative functioning of budgets, reporting, etc. are separated as distinct assignments.

4



Here recognition is given to providing services to special constituency.

Organizational Diversity

There are variations on these with different bureau levels. Titles used for administrative services may be "management," "operations," or "business." Services may be "ancillary services" or "support services." Some unique bureaus include "career education," "community colleges," "area schools," "urban occupation," "field observation," "industrial development," "adult education," "private and veteran programs."

The increased diversity of organization is illustrative of the growing problem of trying to effectively accommodate the growing responsibilities.

Organization tables, titles and role descriptions are of course, very deceiving to one on the "outside." Organization tables are at best gross generalities and do not necessarily reflect a precise or consistent line of communication or authority. Role descriptions are frequently imprecise. It is for these reasons that it is virtually impossible to categorize State department line and staff organization or staff size, and thus they have not been identified as treatment variables in this study.

Size of a staff is in general related to the size of the State and the size of the program. Many States supplement central staff by establishing research services and/or curriculum centers outside of the department or have regional offices. There is also use of other supporting agencies such as university staff and State planning agencies, among other agencies. The number of vocational staff members varies from as few as 12 to over 150 members. It is difficult to understand how so few as 12 members can deal with all the responsibilities placed on a vocational education division. The scope of operation of a State with as few as 12 staff members is undoubtedly not as broad as other States but the number and kinds of reports alone are the same for small States as for large States, not to mention all other services such as accounting, distribution of funds, evaluation and other required activities.

Efforts to Improve State Administration

While the diversity of line and staff organization exemplifies efforts to deal more effectively with changing responsibilities, the efforts to assist State divisions of vocational education to deal with new roles is exemplified by extended research, national and regional conferences, and various formal and informal associations.

State divisions of vocational education have generally done a job of administering their programs in a manner superior to other State divisions. They have also given more attention to critically analyzing their processes. Several very good, broad based studies have addressed various aspects of special problems. Swanson's study (1969) addressed the then current status of the organization for vocational education at the State level, studied perceptions of State level administration, and analyzed selected State vocational education staff patterns. He also developed a format and criterion for self-analysis of State agencies of vocational education as well as a taxonomy of educational change.

Kobel (1973) developed a State "Leadership Development Work Unit" as a result of an intensive investigation of the organizational structure of State departments and of the role of various leadership positions.

Other activities which have addressed State administration have included an extensive effort to improve the management of State departments, a series of continuing conferences and national consulting services have dealt with "Management by Objectives." The leadership for this activity has primarily eminated from the Oklahoma State Department of Vocational Education under the direction of William Stevenson.

A variety of conferences have been run by the Center for Vocational and Technical Education at Ohio State University for State directors and selected staff members of State vocational education departments. Various specialized staff members are brought together yearly by the U. S. Office of Education. Directors of Research Coordinating Units, Professional Development Consultants, consultants of programs for students with special needs and various other groups meet at least yearly to improve their functions.

Expenditures

A State administrative function deals with financial data, which the primary financial responsibility is to distribute federal aid, a discussion of the expenditures of all funds is presented here. Literature review for cost and expenditure research was limited to studies which examined financial interaction with programmatic data such as enrollments, completions and placements.

There was an initial question as to whether expenditures for vocational students were similar to the expenditures for students in other educational programs. Lindman reported the most descriptive method of determining the difference (Lindman: 1972:6). "For the purpose of estimating the additional or excess costs incurred by public schools to meet the suggested national goals (vocational education), it is assumed that the average cost per student in vocational courses exceeds the corresponding cost for general education by 75%." In Lindman's examination of both secondary and post-secondary vocational programs, he found that vocational costs are generally much higher than regular instructional costs and that there are usually large deviations from vocational program mean costs (Lindman: 1972:51-52). He additionally found an inverse relationship between the cost of a vocational program and the cost of other instructional programs. The implications of this study were the apparent direct relationship between program incurred costs and the number of students participating; the reverse occurring for non-vocational instructional programs. That is, in vocational education the cost rose as more students were served, while in "regular programs" cost dropped as more students were added. Thus, it would be expected that States which demonstrate increases in vocational enrollments should also exhibit increases in programmatic costs per student.

Sorenson, in a study of cost predicting strategy in California community colleges, concluded that the size of enrollment within vocational programs appears to have an influence on the per student costs (Sorenson: 1972:66). There was no indication as to the direction costs would take with increased size, but this finding is consistent with previous literature.

Most studies implied that problems encountered in the financing of their program operations were not the result of system inability to apply the funds to services. The major concern, raised by these studies, was that existing financial distribution formulae were not entirely appropriate for the needs of individual States.

In an informational needs study of 48 State directors of vocational education and 15 local directors, finances were reported as major problems (McCracken and Gillespie: 1973a:1973b). State directors of vocational education felt that problems related to finances were: 1) legislative control, 2) disbursing federal and State aid, 3) obtaining federal and State aid and, 4) community control (1973a:26). Local directors of vocational education reported their problems related to finances were: 1) obtaining federal and State aid, and 2) legislative control (1973b:29). Financing obviously is of primary concern.

Korim investigated State grants mechanisms for the distribution of federal vocational education funds between 1969 and 1971 (Korim: 1972: 15). He states: "...the apparent congressional intent is to direct vocational education spending in ways different from what would occur if States and localities were free to follow the dictates of their own priorities." (p. 15). Korim concluded his analysis that the only tangible insight into the functioning of State grant mechanism, is the revelation that States use a proposal approach in distributing (federal) funds for the various (expressed) purposes (in the federal acts) to the LEA's. (p. 17.)

Young reports that the distribution of federal funds may in fact be adversely affected by the use of factors in a distribution formula (Young: 1972:2). He found that USOE requires States to utilize an allocation system contingent upon: 1) manpower needs, 2) vocational education needs (of students), 3) relative ability (of a school system) to pay, and 4) excessive costs (above those normally expected.) Young suggests that better and more appropriate distribution methods should reflect: 1) geographic distribution of age-specific unemployment, 2) relative wages earned by relevant population, 3) existing, efficient and effective vocational education programs to continue receiving funds in the future (p. 3). He concludes his analysis by suggesting these factors be used in these distribution strategies: 1) curricular strategy 2) training for related openings strategy, and 3) labor market success strategy (pp. 11-17). Should financial distribution formulae be modeled on these strategies, Young felt more useful data could be generated to determine future directions.

The subject of cost data availability was of main concern in two related studies. McLure reports that expenditures are not reported for instruction in any vocational field which does not receive federal reimbursement (McLure: 1965:7). Somers states similarly on the same subject: "...in spite of all the federal dollars allocated for vocational education since the first Act in 1917, there are no national data available for an evaluation of the effectiveness of vocational education programs." (Somers: 1971:2).

Somers' research explored two specific questions in Wisconsin's vocational system: 1) Do records permit determination of cost by size of groups? 2) Can percentages of costs chargeable to programs be ascertained? (p. 180). He found that secondary vocational programs have higher positive answers to both questions but lower negative answers to both questions than post-secondary vocational education (p. 180). He also found that secondary schools have the best information on administration costs while post-secondary schools have the best information on instructional costs (p. 180).

Cost data availability by size of enrollment analyses showed an inverse relationship between student population and accuracy of information; chances of getting usable cost information from small and medium schools are 50% while similar data chances from larger schools are 40% (p. 181).

In terms of the setting of the vocational schools, Somers found that ghetto schools can provide almost complete cost information on professional and auxiliary services, instruction and capital outlay, but they have no information on fixed charges (p. 182). Fifty percent of rural schools could provide cost information, while 1/3 of surburban schools could provide cost information on vocational programs (p. 182).

It appears that cost data availability is contingent upon the formula being used to distribute funds from the SEA to LEA. Since the standard formula varies with the size of enrollment, needs and program setting, accuracy is implied to fluctuate with the requirements for reporting inherent in a States formula. Subsequently, there is not much reliability placed on cost data and a more noticeable tendency to generate expenditure data as a compliance rather than self-initiated effort.

The impact of financial assistance to local education agencies was also seen in the differentiation between urban, semi-urban and rural vocational programs. Specifically, there is some concern about the financial inequality between these categories which may be generated by funding formulae; whether financial assistance is proportionate to enrollment or area needs for vocational programs.

Expenditures in large cities

While not a part of this study, the distribution of funds to large cities is an important side issue. A United States Office of Education study analyzed populations, vocational education enrollments, teachers and expenditures in the major cities of the United States (DHEW-OE: 1971). It was reported that 24 major cities' percentages of enrollment in vocational education fall behind the percentage of population for the nation. In other cities, enrollment percentages in vocational education exceed the population by 2.0 percent. Comparisons of total expenditures with enrollment reveal that 32 cities receive a lesser percentage of their States' total vocational funds than their percentage of enrollment (when compared to State distribution of funds). "The total expenditures of all 32 cities under-supports vocational enrollment by 4.5 percentage points." (Based on national averages).

It is apparent that the efforts of the major U. S. cities is not proportional to their needs in vocational education services. The amount of financial support for these cities does not appear to be highly related to population and enrollment factors being reported. This implies a severe limitation in vocational programs delivery in the major cities and should be investigated in greater detail. It is inferred that the funding formulae being used by the States may be the cause of this disproportionate effort and that the funding formulae may in fact be contrary to legislative intent in providing vocational education services to populations in need of it.

The literature reviewed justifies an apparent need to determine: 1) the reliability of cost data being reported and 2) the interaction of cost data with other vocational education data. Determinations of this sort may be most useful in the identification of influential reliable data which may be used to provide effective planning for vocational education programs.

An overview of expenditures included in this study

Research presented in the review of literature reports a relationship between enrollments and cost for vocational instruction, a pattern not similar to other forms of education (Lindman: 1972:52). It was therefore expected that there would be similar changes found in per pupil expenditures and enrollments. Completions and placements are related to enrollment, and similar changes were also expected to occur.

Per pupil expenditures are defined as the fiscal amount necessary to provide direct instruction to pupils. Data was obtained from Project Baseline statistical report and verified with other published sources. Expenditure data was also available for secondary, post-secondary, adult and total expenditures. Disadvantaged and handicapped expenditures were not available by instructional level nor were they available in an actual dollar figure. Subsequently, disadvantaged and handicapped expenditures are expressed as an "expenditure ratio of disadvantaged and handicapped programs to total expenditures for vocational education programs."

Three concerns are addressed in this study: 1) federal instructional expenditures, 2) federal, State and local instructional expenditures, and 3) the ratio of federal to State expenditures. The first of these was obtained from Baseline Data, Vol. 3, Table 16, page 26 for 1972-73 and from Vol. 3, Table 83, page 106. These were reported as per student costs, Table 1, Appendix D, illustrates the differences from 1970-71 to 1972-73 for the total pupil expenditures, secondary, post-secondary and adult levels. Table III illustrates the number of States which decreased and increased their federal expenditure per pupil at various levels.

TABLE III

NUMBER OF STATES SHOWING DECREASE AND INCREASE FROM 1970-71 to 1972-73 IN FEDERAL EXPENDITURE PER STUDENT, BY TOTAL AND LEVEL
N=50

	Number Decreases	%	Number Increases	%
Total	28	56	22	44
Secondary	20	40	30	60
Post-Secondary	32	64	18	36
Adult	26	52	24	48
Secondary and Post-Secondary	13	26	8	16
Secondary and Adult	9	18	9	18
Post-Secondary and Adult	18	36	9	18
Secondary, Post-Secondary and Adult	5	10	4	8

Since so few States show a decrease at all these levels, or even a decrease in two areas, one would expect there to be a shift of instructional costs per pupil among the programs. There is one clear shift indicated. There is a negative correlation of -.384 between secondary and post-secondary education per pupil costs. Secondary expenditures of federal funds rising while post-secondary federal per pupil expenditures dropped.

Table IV illustrates the means and standard deviations of these expenditures.

TABLE IV

MEANS AND STANDARD DEVIATIONS IN CHANGE OF FEDERAL EXPENDITURE PER PUPIL, 1970-71 TO 1972-73

	Mean	Standard Deviation
Total	1.21	13.85
Secondary	4.14	40.38
Post Secondary	-15.49	77.62
Adult	2.85	13.83

In light of the increased costs inherent in the economy, mean increases are expected.

Federal, State and Local Expenditures

The data for this variable was obtained from Baseline Data, Vol. 3, page 105, Table 81 which is reported in per student costs. The figures on Table 2, Appendix D, represent the changes between 1970-71 and 1972-73.

Table V indicates the number of States which have shown a decrease or increase in per pupil expenditures over the time span.

TABLE V

NUMBER OF STATES SHOWING DECREASE AND INCREASE IN TOTAL PER PUPIL EXPENDITURES BY TOTAL AND LEVEL, FROM 1970-71 TO 1972-73

N=50

	Number Decreases	%	Number Increases	%
Total	16	32	34	68
Secondary	20	40	30	60
Post Secondary	24	48	26	52
Adult	23	46	27	54
Secondary and Post Secondary	11	22	17	34
Secondary and Adult	11	22	16	32
Post Secondary and Adult	13	26	16	32
Secondary, Post Secondary and Adult	6	12	11	22

Since there are few States which experienced a decrease over more than one program area one would suspect some interactions between the expenditure figures. There was a very small negative correlation between secondary and post secondary; -.023, but the direction is not clear and it is certainly not significant.

The means and standard deviation of each of these variables is shown in Table VI. Only adult education showed a mean decrease.

TABLE VI

MEANS AND STANDARD DEVIATION IN CHANGE OF
FEDERAL, STATE AND LOCAL EXPENDITURES,
PER PUPIL 1970-71 TO 1972-73

	Mean	Standard Deviation
Total	11.99	85.08
Secondary	11.39	101.61
Post Secondary	55.60	394.69
Adult	-4.86	48.71

The inconsistency between Tables IV and VI at the post secondary level are difficult to explain. While 24 States showed a decline in post-secondary education in per student cost, the mean per pupil expenditure for the nation went up considerably more than for other levels. At the same time, adult expenditures dropped. This latter factor may be because of the funding under MDTA, but that is highly conjectural.

Handicapped and Disadvantaged as a Percent of Total Vocational Expenses

Data from Project Baseline, Vol. 3, Table 82, pages 106-107, reports handicapped and disadvantaged expenditures in percent of total vocational funds.

To determine whether there has been a positive or negative change in that ratio, 1970-71, ratio was subtracted from 1972-73 data. This resulting figure is represented on Table 3, Appendix D, along with another figure, the ratio of State local expenditures to federal expenditures (Baseline Data, Vol. 3, Table 15, page 110). Only nine States showed an increase ratio of spending for the handicapped (this is primarily caused by new reporting procedures). Twenty-six States showed an increase in ratio of funds for the disadvantaged. Seventeen States showed an overall increase in the ratio of State/local funds to federal funds. Means and standard deviation of these ratios are represented in Table VII.

TABLE VII

MEANS AND STANDARD DEVIATIONS OF CHANGE IN RATIO OF STATE/LOCAL EXPENDITURES TO FEDERAL EXPENDITURES OF HANDICAPPED AND DISADVANTAGED EXPENDITURE

	Mean	Standard Deviation
Ratio of State/Local expenditure to Federal expenditures	0.41	1.39
Ratio of handicapped expenditure to Total expanditures	-1.14	2.76
Ratio of disadvantaged expenditure to Total expenditures	-0.33	5.96

Since a large number of States showed a decreasing expenditure over the three years, it is not surprising to see a decrease in the ratio. All decreases are relatively small but since the mean ratio is small to begin with, 13.2% for disadvantaged and 4.8% for handicapped, even a small decrease is worth noting (these percentages should not be confused with the 15% required for disadvantaged and the 10% for handicapped required by federal legislation, since that percent is of federal aid.)

CHAPTER III

DELIVERY SYSTEMS

Introduction

Studies exploring these characteristics were relatively nonexistent. Only one such study, Inman (1974) was found which specifically analyzed the effects of student, facility and vocational system sizes as measures of effectiveness (Inman, 1968). He found that size in and of itself was not a crucial factor, but size was rather heavily influenced by other factors describing a system. He reports that effective vocational schools should contain approximately 500 full-time (vocational) students per facility. In order to achieve this number the overall region/district should be comprised of approximately 17,000 students.

Researchers investigating various delivery systems characteristics generally studied them in a programmatic context, i.e., the numbers and types of training programs offered. While these types of research provided information as to the quality and range of services being offered, there was little indication that the pattern of facilities used by a certain State in fact could have been responsible for effectiveness of delivery. There were no studies of this sort found.

In terms of administrative governance of vocational facilities, the boards of education have apparently not been examined as to their controlling authority and selection procedure. The review also failed to produce pertinent research which assessed the impact of local education agency boards upon the delivery. Although the impact of a particular governance structure could be significant, this does not seem to have been explored in the past.

It appears that the lack of studies relating to the actual delivery of vocational service implies several things: 1) vocational education is highly diffused and very low keyed at the point of delivery, 2) the impact of federal legislation has generated a compliance attitude toward data reporting, 3) only those vocational education dimensions being funded by a State are reported annually; this portion being only a part of the total program. While these generalizations may appear to be quite broad, they are supported by the decreasing amounts of available information at the local level. It is further implied that the primary concern of vocationally-oriented research is essentially a programmatic emphasis; i.e., how well programs are operating, with little attention being paid to the environment and support system being provided for those programs. As one considers the amount of financial and physical resources being applied to the actual vocational training plants, a critical question is raised: Have the successes of vocational education been caused primarily by the programs being offered or has this success also been concurrently affected by the nature of the system in terms of a total educational services delivery?

Data Base

The term "Delivery Systems" has only recently come into fairly wide usage, probably as a result of our space program. Its simplest definition is the vehicle used to place a man on the moon, or the techniques used to strike a target. In its more complex definition, it is all the factors which are involved in making that delivery; the process of constructing, propelling, directing, controlling, back-up process and products--in fact, a highly integrated "system."

When applied to education delivery systems it may well mean using all the processes, materials, manpower facilities and controlling devices used to educate people. Viewed thusly, it could mean, the planning, research, curriculum, textbooks, work sheets, teaching methods, staff functions, administrative processes, controlling devices, counseling services, special education programs, facilities--an endless array of components.

For the purposes of this study, delivery systems are defined as institutions or organizations which offer vocational education programs.

Because there is such a variety of definitions of institutions and organizations, categorization seems non-functional. But an effort has been made to develop categories. The categories used were the definitions established by the U. S. Office of Education. It is unknown how much effort went into these categorizations. It appears not much since there are so many States reporting deviations.

There are twelve categories identified by USOE, and all States were able to identify most of their institutions and organizations within that framework. (Appendix B) However, in a large percentage of cases the States had to modify their definition. While States were able to "fit" their data into the twelve USOE definitions, there were numerous States which had to qualify the definitions, or because of State legal definitions couldn't break the data down to accommodate the definitions. For example, two States have a legal definition which can only be accommodated under "Regular High Schools," and only by an educated guess could identify which of these would be "Comprehensive High Schools." They reported only under "Regular High Schools." At least one other State had legally defined "Comprehensive High Schools," and could not identify schools which met the definition of "Regular High Schools."

Similar problems existed in other categories. Some skilled centers are a part of a regular high school or post high school. Some area vocational-technical schools are an integral part of a regular or comprehensive high school. The particular definition of area vocational schools provided another problem in that about half were identified as being secondary level, some were post-secondary, and others provided services at both levels. The data accumulated would permit some treatment of relative size, relative distribution of enrollments, funds and relative numbers of schools. Thus with the description of their own facilities, a descriptive analysis could be made.

While the data reported is not hard data, the staff is satisfied that the information reported is representative. Six States were contacted in person; three by phone and three by visitation to validate and clarify information. In each case the data obtained from various sources was substantially confirmed. For example, Table VIII illustrates the consistency of funding expenditures. The data collection instrument is displayed in Appendix F.

TABLE VIII

A 1973 COMPARISON OF SIX STATES REPORTS WITH PREVIOUSLY ACCUMULATED DATA. PERCENT OF FEDERAL AID USED FOR VOCATIONAL EDUCATION

	State Reports	Baseline Data
Secondary federal expenditure	15.3	15.2
Post Secondary federal expenditure	15.9	15.4

The data collected by category included:

1. Number of schools offering vocational education by twelve USOE definitions.
2. Estimated vocational enrollment in the schools.
3. Percentage of vocational enrollment in categories of:
    a. Level - high school, post high school and adult
    b. Disadvantaged and handicapped in regular programs
    c. Vocational students in special needs classes
    d. Funding by federal, State, local and other
    e. Level of controlling board (State, regional, local)
    f. Process of selecting controlling board (election--partisan, non-partisan; appointed--at large or constituency)
    g. Availabilities of cooperative program
    h. Number of schools designated as area vocational schools.

There was considerable difficulty experienced by State departments in reporting percentage of vocational students. In spite of rather extensive pretesting there were some questionnaire problems experienced by the respondents.

The most serious one was that the percentage of vocational enrollment by level and by category (disadvantaged, handicapped and special needs students) was not always reported by school category. Some States reported by percent of total vocational enrollment assigned to a given institutional category. This resulted in only being able to report the categories of schools which provided educational programs to students with special needs. The dimensions of these services was thus lost. Another problem was missing data. Of 42 questionnaires returned only 37 were deemed usable, that is, had sufficient information to be used in the study. Certain data from the other five was salvaged and used in analysis.

General Descriptions of Schools by USOE Category

Delivery Systems Description

Much of the collected data about delivery systems is purely descriptive. The information used in the descriptions is not as definitive as desired, for there was considerable missing data which States were unable to report without generating a whole new accounting system. Yet this data does illustrate the diversity of practices. Table IX is the most descriptive presentation, for it indicates the relative use made of the various institutions, the distribution of funds and the organizational structure. A further breakdown by States indicating the variety of institutions used by each State is illustrated in a table in Appendix E.

Delivery System Description

A major concern of this study has been to seek out the variety of institutions rather than programs being used for delivering vocational education. A careful review of the State plans indicated that 44 different titles were used by the various States. (See Appendix C)

But there was no clear indication of how these were being used; the level--high school, post high school or adult; or the degree of interrelationships which existed. This information was therefore sought from all States. It was quite clear that a questionnaire could not be designed to accommodate all the variations which existed in each State. In an effort to make the data manageable, as already noted, the U. S. Office of Education's definitions were used, giving each State an opportunity to indicate how their own definitions varied from that of the USOE definition.

TABLE IX

SUMMARY OF ACCUMULATED DESCRIPTIVE DATA OF LOCAL DELIVERY SYSTEMS

Type of Institution	Number of States	No. of Schools Offering Voc. Ed.	Level of Enrollments by No. of States			Special Needs by No. of States		
			High School	Post H.S.	Adult	Disadvantaged	Handicapped	Special Needs
1. Regular High School	12	2659	12	3	8	10	10	7
2. Comprehensive High School	30	5814	30	4	13	21	22	21
3. Comprehensive H.S. (with cross enrollment)	11	1737	11	2	7	11	11	10
4. Occupational Training Annex	7	158	5	2	1	5	5	1
5. Regional/area Voc-Tech School	24	870	20	24	16	19	17	15
6. Regional Skill Center	12	148	6	10	12	10	7	
7. Adult and Continuing Education Schools	9	949	3	4	9	5	4	3
8. Technical Training Center	4	42	1	2	2	2	2	2
9. Technical Institutes	14	154	4	14	13	11	11	3
10. Community/Junior College	25	426	5	25	19	19	19	7
11. University Branches	6	24	0	6	3	3	3	0
12. College/Universities	17	100	0	17	8	6	7	3
13. Other	8	104		5	8	3	8	8

Table IX - Con't.

Type of Institution	Percent of Funding				Most frequent Controlling Boards		Area Vocational Schools	
	Federal	State	Local	Other	Level[1]	Selection[2]	No. of States	No. of Schools
1. Regular High School	17	40	43	0	L	PE	0	0
2. Comprehensive High School	14	43	43	0	L	PE	9	518
3. Comprehensive H.S. (with cross enrollment)	12	35	53	0	L	PE	4	129
4. Occupational Training Annex	13	50	37	0	L	PE	2	15
5. Regional/area Voc-Tech School	16	52	30	2	L (11) S (6) R (1) V (6)	A (9) P (2) V (13)	24	810
6. Regional Skill Center	51	27	21	1	L (4) S (4) V (4)	PE (4) V (8)	5	128
7. Adult and Continuing Education Schools	40	47	13	0	L (4) R (2) S (2)	V	6	103
8. Technical Training Center	13	63	22	2	S (2) L (2)	A (3) PE (1)	4	34
9. Technical Institutes	7	85	7	1	R (3) S (8) V (3)	A (8) PE (3) V (2)	10	87
10. Community/Junior College	14	66	9	1	S	A (11) PE (1) V (13)	14	129
11. University Branches	9	62	19	10	S	A	1	12
12. College/Universities	14	72	11	3	L (3) S (14)	A	4	20
13. Other	32	48	20	1	V	V	0	0

[1]
L = Local
R = Regional
S = State
V = Varies

[2]
PE = Popular Election
A = Appointed
V = Varies

At the same time, an effort was made to get a sense of: 1) the number of each kind of institution, 2) the average size of the institution, 3) the distribution of students by level, the extent of service to students with special needs, 4) the source of funding, 5) nature of the board of control and 6) the kind of cooperation which existed between institutions and the identification of schools designated as area schools.

The questionnaire was known to be weak--it was purposely designed to obtain broad information without requiring each State to generate a whole new set of data. The intent of the questionnaire was to obtain data to permit a general description of the variety of institutions used to deliver vocational education. It was not designed to be an evaluative instrument and the data was not being collected for statistical treatment but rather to get a general dimension of the size and frequency of use.

The breakdown of vocational enrollments by percent was apparently not a valid question for it was frequently not reported or was misunderstood. What did emerge was the primary level served by each kind of institution and whether or not special needs students were being served.

The variety of organization to provide vocational programs and services to the maximum number of students is truly extensive and very imaginative. Beyond the broad concerns of this study, the specific kinds of delivery within school systems is truly exciting. Visitation to schools has demonstrated a variety of processes for serving various clientele.

The Joseph E. Keefe School in Massachusetts, a regional vocational school has responded to a "mainstreaming" mandate to serve physically handicapped, emotionally disturbed and retarded right within its regular program and classrooms. There are problems but the degree of success is impressive. Nassau County, New York BOCES through its Rosemary Kennedy Center, provides occupational training for retardates and moves those with greater potential to industrial or business work study programs with instructors in the business or industry. If one begins to explore these kinds of variations, the list would indeed by extensive.

Other schools are testing out a variety of work study or cooperative work programs in different ways. Open classrooms, alternative schools and programs are being attempted--the list goes on. Vocational educators are adapting to a variety of challenges in a number of ways--too many ways to permit a listing, and not all evaluated as effective as yet.

General Description

The most popular vehicle for offering vocational education is the comprehensive high school, followed by the regional/area vocational-technical school. The latter is the most frequently used institution for designation of "area school."

While the USOE explicitly states, "regular high schools are without vocational education programs," nine of 37 States report these as providing "limited vocational programs." Some States do not use this term, but by law may label high schools as "comprehensive," others use similar definitions but in addition to "three or four-year schools," have some schools five or six years.

But 14 States did report that there was vocational education being offered in "regular high schools." In these 12 States, 2,659 of 3,211 such schools or 83% were offering some vocational education. Eleven of the States reporting these schools had boards of education elected by local popular vote.

Board Level

Analysis of Table IX illustrates the level of administrative control. It appears that at the high school level (rows 1, 2, 3 and 4) the controlling boards are locally and almost universally elected. Post-secondary education (rows 8, 9, 10, 11 and 12) are primarily State controlled. The other institutions have a mixture of State, regional and/or State boards of control.

Facilities

States have each developed their own mechanisms for providing vocational education programs and services to its populace. No State has a single device for doing this. It is quite clear that the secondary level is generally the major device used for vocational education in virtually every State. But even in this one kind of facility there are a variety of devices used. In large high schools where the density of population is great enough to generate minimum size classes a "comprehensive" high school may provide a wide variety of vocational education offerings. Smaller rural high schools in sparcely populated areas may be able to offer agriculture education, home economics education and business education, but some are so small that no vocational program can be offered. Beyond these extremes, large cities may develop specialty schools for such things as trades, fashion design, merchandizing or other specialties. At least one State continues to operate high school agricultural schools - several have regional agriculture programs attached to local high schools. Regional vocational schools may encompass all vocational programs or just one; may be separate schools or attached to a local high school. Skill centers may have been established to provide a wide variety of vocational programs to students from a designated region with academic courses taught in their regular high school, requiring extensive daily transportation.

Descriptions

Regular High School

3 or 4-year school providing academic and elective courses, without vocational education programs.

Clientele: The clientele of these schools obviously is primarily high school age youth. Three States reported that some post high school vocational education was offered, and eight States reported adult vocational education was offered. Ten States identified vocational education services to the disadvantaged and handicapped in regular courses, and seven had vocational programs especially designed for students with special needs.

Federal support: The federal financial support of vocational programs in these schools ran from 0 to 73, the mean being 17%, half the States supported the schools with between 10-20% federal aid. State aid was generally higher than federal support, from between 15% to 81%, the mean being 40%. The local expenditures were from 10% to 83%, the mean being 43%. Only one State reported other funding of 5%. The nature of this source was unspecified.

Controlling Boards: Boards of education are elected by popular vote at the local level.

Area Vocational Schools: No State reported using these schools for area vocational schools.

Enrollment count: In reporting enrollments, a wide variety of standards are used. From "anyone enrolled" (presumably in a course receiving federal aid, or approved as a vocational program) to "number of students x clock hours x weeks x students divided by 30.

Deviations from the USOE definitions include:

1. provides directed vocational programs
2. includes grades 7-9
3. with or without vocational programs
4. includes grades 7 to 9, may have less than 4 areas of vocational education.

Comprehensive High Schools

School with number of departments (e.g., academic, industrial, business and vocational) offering a diversified program to meet the needs of pupils with varying degrees of interests and abilities.

Clientele: By far the largest number of institutions offering vocational education are the comprehensive high schools. These were reported by 30 of the 36 States included in the study. These almost exclusively offer programs for high school age youth. Only four States reported any post high school programs offered through these schools. Twelve States reported that they were used by adults, but it is reasonable to speculate that these would be evening programs for the most part, though some could have been used during the period of 1970-71 to 1972-73 for full-time MDTA programs.

Boards: Most of these schools have elected local boards, but there are a variety of other processes used to establish boards. Some States have a mixed procedure with some schools using locally or constituent appointed groups. Other States reported State appointed boards in addition to local elected boards. Only one State reported regional selection by election.

Funding: The funding patterns show a slightly lower federal input (14%) than for regular high schools, but higher in State support (43%). The means of percentages of federal, State and local are generally similar for both regular high schools and comprehensive high schools with cross enrollment.

Area Vocational Schools: Five of the 30 States reported the use of comprehensive high schools as area vocational schools.

Disadvantaged and handicapped: Most States (22 of 30) reported serving disadvantaged and handicapped in regular programs in the comprehensive high schools. Twenty-one States provided special vocational programs for students with special needs.

Deviations:

1. with minimum of five vocational programs
2. by law, all high schools are comprehensive
3. high school and junior high schools with one or more vocational education program
4. also referred to as "regular high school"
5. used mostly in larger metropolitan areas
6. high school, or district with more than one high school offering vocational education
7. a) senior high school offering vocational education and sending students to area vocational schools
   b) senior high school offering more than four vocational areas, students remaining on campus
8. one or two vocational programs, the rest (of the vocational students) received at area vocational center.

Comprehensive High Schools with Cross Enrollments

Comprehensive high school offering some vocational programs with students enrolling in their school district and attending another district for vocational education (but remaining a member of their own district high school).

Clientele: States reporting schools in this category, and comprehensive high schools (without cross enrollment) are very similar in virtually all aspects reported. They are primarily high school enrollment serving limited post high schools and adults, all reporting States (not necessarily all schools) serving disadvantaged and handicapped in regular classes, and all but one State reporting at least some of the schools provided special vocational classes to special needs students.

Boards: Boards are generously elected by popular vote.

Funding: Funding is more heavily on the local resource (53%) and less on federal resources (12%) than for other high schools categories. This would be expected since the vocational programs could be in other high schools.

Area vocational schools: Four States use some of these schools as area vocational schools.

Deviations:

1. referred to as satellite schools
2. comprehensive high schools with area offerings
3. used mostly in metropolitan areas with basic vocational education
4. Alternate design used by regional vocational-technical schools
5. serves groups of high school students sharing dollars and students in vocational education and other education by law
6. referred to as area vocational school district with taxing power
7. called part-time alternative
8. some multi-county service center.

Occupational Training Annex

A vocational education service center combined with one of the district schools of a school system.

Clientele: Seven States reported institutions in this category. Five provide services to high school youth, two to post high school. The five States with high school level programs include some schools with disadvantaged and handicapped in regular classes. Only one State reported some schools offering special vocational programs to special needs students.

Board: The board of control most frequently is elected locally, one State reported boards selected at the State level by a device other than elected, appointed or constituent processes. Two States reported locally appointed boards.

Funding: Funding is more heavily at the State level than the other two high school programs, and less at the local level.

Area vocational schools: Two States reported using some or all of these schools as area vocational schools.

Deviations:

1. area secondary vocational schools serving satellite school districts in a geographic area
2. career skill center serving a population area
3. secondary and post-secondary programs under central administration on a regional basis
4. career or occupational center serving two or more schools within one district, having separate facilities

vocational center combined with one district school.

Regional/Area Vocational-Technical School

A series of vocational schools, with programs corresponding to the needs of the student within a district or regional area.

Clientele: These schools tend to be more post-secondary than secondary, but in general serve both levels with 16 of 24 States reporting adult enrollments. Most of the States reported that handicapped and disadvantaged were served in regular programs and 15 States reported special vocational classes for students with special needs.

Boards: Boards of control vary considerably. Three States have appointed boards; several States report a variety of levels: State/local, State/regional, State/regional/local; the method of selection tends to be more appointed than elected even at the local or regional level. Some States report that some schools have board members selected from constituent groups.

Funding: The funding depends heavily on the State (52%) with a modest 16% from federal resources, the balance, 32%, from local sources.

Area vocational schools: All States reporting these schools indicated them as area vocational schools, 810 of 870 schools are so designated.

Deviations: There seems to be considerable confusion about the definition of an area school. Deviations from the USOE are:

1. post secondary area vocational schools
2. regional occupational program centers
3. single school rather than series
4. post-secondary schools on a regional basis may be associated with a university or community college
5. State supported facilities offering at least five vocational programs and serving one or more high schools
6. broken down into regional area and branch centers
7. post-secondary programs in regional schools and controlled by single or groups of school districts
8. area vocational center serving one or more high school districts
9. includes as institutions satisfying the definition of occupational training annex and regional skill center.

Regional Skill Centers

Vocational education service centers offering vocational programs and enrolling students from a number of district high schools in the 11th and 12th years, or the last two years of a student's school career.

Clientele: Twelve States reported having institutions meeting this definition. These tend to be more post-secondary and adult than secondary, two States reporting they serve only adults. Ten States report that some schools include disadvantaged in their regular program, several include handicapped, none report specially designed programs for students with special needs.

Boards: The boards of control vary considerably, four States report the boards are elected at the local level, four report appointed members or constituent selection, two have State appointed boards, one State elected its board members, (probably the State board of education) one regional with either appointed or elected, one local, appointed or elected.

Funding: Funding is heavily from federal resources (51%), the remainder about evenly split between State and local resources. Three States report 100% federal financing, these are serving CETA programs.

Area vocational schools: Five States have designated one of these schools as area vocational schools.

Deviations:

1. regional skill center for CETA training (3)
2. exclusively for Bureau of Indian Affairs schools
3. provides service to high school students
4. includes adults

5. used as high school regional schools
6. same as area vocational schools
7. alternate to area vocational schools
8. vocational education for disadvantaged adults
9. disadvantaged and handicapped students at the post-secondary level only
10. area vocational schools serving secondary schools from two or more school districts
11. county vocational centers.

Adult and Continuing Education Schools

Instructional services designed to assist adults and youths who have either completed or interrupted their formal education.

Clientele: Nine States report the use of institutions which meet this definition, serving primarily adults, though some include services to secondary and post-secondary students. Five States report disadvantaged, three States report handicapped as being enrolled in regular programs. Three States have schools with special programs for students with special needs.

Boards: The administrative arrangement differs from State to State. Four have locally selected boards, three are selected by popular vote, one State has appointed boards, two have regionally appointed boards. Others have mixed State and locally selected boards by appointment and/or election. Two report regional boards, one elected, the other appointed.

Funding: These schools are funded primarily from federal and State funds; only 13% from local resources.

Area vocational schools: Six States identify some of these as area vocational schools.

Deviations: It would appear from the reporting that most of these schools are related or a part of some other school, i.e., high schools, area vocational schools, skill centers or training annex. Deviations from the USOE are:

1. covered by regional skill center
2. skill center CETA
3. run in existing facilities
4. some connected with area vocational schools or skill centers
5. correction high schools and area vocation
6. State supported programs serving adults and out of school youth who have not completed high school - offered in existing facilities
7. services include secondary and post secondary
8. operated in existing facilities (3)

9. adult basic education only
10. combined with skill centers
11. extended day school programs.

Technical Training Center

Center functioning in cooperation with an area vocational education center, both administered by one authority with one tax base for both.

Clientele: Four States report using this structure, primarily at the adult and post high school level with one State having schools providing services to high school youth. Two States report the inclusion of disadvantaged and handicapped in regular programs and two also report some schools providing special vocational education for students with special needs.

Boards: Two States report boards of control selected at the local level and by appointment, one by election, two report having boards of control at the State level by appointment.

Funding: Funding for these schools is heavily at the State level, 63%, two States at the 80% level. Federal and local funds are about evenly balanced.

Deviations: All four States report most or all of the schools to be area vocational schools. Deviations from the USOE are:

1. State facilities open at least 12 vocational programs serving primarily post high school and adult students but many serve some high school students as well
2. secondary and post secondary programs showing multiple tax base with school district
3. do not have full time post high school program on campus
4. area vocational schools also serve as technical training center.

Technical Institutes

Technical education centers functioning independently of other city, county educational units contained within their district. (May be assisted financially and supervised by either a State Board of Education to a Board of Higher Education within a State.

Clientele: Fourteen States provide 154 such schools, all primarily at the post high school and adult levels. Four States serve some high school youth. Eleven States report the inclusion of disadvantaged and handicapped in regular programs, three report some schools with special programs for students with special needs.

Boards: Eleven of the States have State boards, eight appointed and three elected. One has regional appointment and one has local/State appointments.

Funding: The funding is primarily at the State level 85%, three States reporting 100% State funding. The rest of the funding is primarily federal funds.

Area vocational schools: Ten States report all or some of these as area vocational schools.

Deviations:

1. private post secondary propriatory schools
2. State post high school vocational technical centers governed by local high school district
3. State institution for pure vocational education
4. operated by State board, serves the entire State
5. also functions as area vocational school.

Community/Junior Colleges

Institutions providing transfer programs for baccalaureate degree credit, technical preparation for para-professional occupations and community service programs of an adult education nature.

Clientele: Twenty-five States reported having a total of 426 of these schools. These are primarily post secondary programs with a large proportion also serving adults as well, and in a few States (5) providing some services for high school age youth. Nineteen States reported disadvantaged and handicapped involved in regular vocational programs, and seven report some schools with special programs for students with special needs.

Boards: While the most frequently reported board of control is State appointed (11 States), there are a variety of processes used. Five other States also report State level boards, two selected by popular vote, one by appointment and from a constituency, and one combined with some locally elected members. Two report regional boards, one by appointment, one by election. The others have combinations of local/State/regional; by appointment, election and/or other processes.

Funding: The funding is primarily at the State level (66%) going from 30% to 90% in four States. Federal funds used, average about the same as in high school programs (14%).

Area vocational schools: Fourteen of the 25 States designate some or all of their community colleges as area vocational schools.

Deviations:

1. combination community college and technical institute on one campus
2. two year associate of arts degree and one year certificate program
3. in post high school vocational technical school for less than a bachelors degree
4. non-degree granting
5. technical preparation for para-professional and service training at adult and post high school level
6. technical community college
7. technical college.

University Branches

Local unit of a sponsoring university offering technical education programs, but located in an urban area separate from the main campus.

Clientele: Six States report using university branches for providing vocational education. Three reported only post high school programs; three others reported post high school and adult programs. Three States report disadvantaged and handicapped in regular vocational programs, but there are no reported schools providing special vocational programs to students with special needs.

Boards: Boards of control have three States reporting State level boards, selected by appointment or constituent groups. Two are regionally appointed, one is locally appointed.

Funding: The funding of this institution is primarily from State funds (62%) with only 9% funding from the federal government.

Area vocational schools: Only one State identifies these kinds of schools as area vocational schools.

There were no reported deviations from the USOE definitions.

Colleges and Universities

Programs in technical education offered within a specific department, programs being oriented toward acquisition of baccalaureate degree in technical areas.

Clientele: Seventeen States report vocational education in 100 colleges and universities. All are reported at post high school education, with eight States reporting adult vocational education programs. Six States report disadvantaged and seven States report handicapped in regular programs. Three report special vocational programs for students with special needs.

Boards: Boards of control are: fourteen State appointed or constituent groups, one regionally appointed, one locally by popular vote, one locally appointed.

Funding: Funding for these programs are primarily from State resources (72%), 14% from federal funds.

Area vocational schools: Four States report some of these schools as area vocational schools.

Deviations:

1. One minority offers allied health only
2. provides two year associate degrees
3. provides post secondary vocational training for A.A. and the B.A. degree
4. two year technical programs
5. nursing and dental health.

Other Kinds of Schools

Eight States reported other kinds of schools or organizations:

1. Boarding home for rural areas.
2. Schools for deaf, blind, handicapped, corrections.
3. CETA prime sponsors.
4. Proprietary schools offering post secondary education.
5. Special State institutions, correcting hospitals, institutes for handicapped.
6. County vocational schools, secondary and post secondary for agriculture. City and independent school districts.
7. State prisons, hospitals for mentally ill, schools for deaf and blind.
8. Drug rehabilitation, ex-felon programs, social services, mental health, retarded hospital correction, social action agencies, private agencies.

It is likely that most other States overlooked these kinds of specialized vocational services in their reporting. The response to the questionnaire was clearly on traditional public education institutions.

Because of the diversity of these "other" programs, no generalizations can be made other than to point to that diversity.

The data generated by this questionnaire has limited statistical use. The number of categories of schools was collapsed to secondary, post-secondary and adult. The board of control could not be used because of the variations existing in each category.

Local Staff

Staff information was acquired from Baseline Data, Vol. 3, Table 44, page 62, for 1972-73. For 1970-71, information was accumulated from Vol. 1, Table 194, page 70-71. A ratio was established on the basis of a per thousand population for each State, for the two different years and a "change" figure generated. The change figures are displayed in Table 4, Appendix D.

The correlation between the 1970-71 and 1972-73 was .735 indicating a high degree of consistent reporting. The mean change was a loss of 0.04 staff from 1970-71 to 1972-73, 28 States showing a decrease.

CHAPTER IV

PROGRAM EFFECTIVENESS

Background

There were few studies found which dealt directly with the issue of determining quantity and quality of vocational education at the national level. The National advisory Council and the USOE have in various ways attempted to report effectiveness. One major research project by Somers (1973) reported on effectiveness based on student achievement. It was found that there is a void in vocational studies to attempt to describe delivery systems in relationship to effectiveness. Implications of related research generally pointed out that there were too many factors involved in an educational enterprise to allow for precise, clearly-stated definitions. These studies also alluded to the vagueness of data being generated from vocational systems which would further complicate the use of such definitions.

Erick Fendman stated, "...a suggested national goal at this time is that vocational education should be available to 50% of all public school students." (Fendman: 1972). Marland, however, suggests that all students in school systems should be exposed to preparation for careers at any level (Marland: 1971:11). This suggests a quantitative increase based upon enrollment. In terms of placement, the American Institute for Research reported that 50% of vocational graduates enter trades for which trained or highly related occupations. They also found another 15% entered occupations which are somewhat related to their trade preparation (Shoemaker: 1967:5). In spite of definitional problems relating to placement in "trade for which trained or related occupation," these findings demonstrate that a good indicator of the quality of delivery systems is available in student placement reports.

Shoemaker's study, of the Great Plains School District, was the only piece of research which directly examined the variables of quantity and quality (Shoemaker: 1967:13). Quantity of vocational education was defined as the flexibility in curriculum facilities and program offerings. The former definition was consistent with current exploration while the latter implied the availability of services for student preparation, i.e., evidenced by placement rates.

Inman examined the effect of size and school district organization (Inman: 1968). His basic definition for size was that of student enrollment. His prevailing assumption seems to be that size is an important factor to consider when a State undertakes the task of organizing its school districts into units which will produce expected educational results. It was found, however, that size, in and of itself, is not necessarily important; it is related to the objectives of the school system. This finding was again supportive of the use of student enrollment as a quantifying variable but also justifies its use as a dependent rather than independent measure; fluctuations in enrollment being dependent or interacting with other factors.

Law perceived vocational education problems in terms of definitional methodology and placement reporting (Law: 1974:5). In expounding on the various problems facing vocational education, he reported a tendency to define vocational education in terms of funding because of the influence of federal legislation. While this tendency is justifiable, Law contends that the lack of a standardized definition has contributed to deficiencies in statistical reporting (Law: 1974:6).

With respect to disposition of vocational graduates, Law states: "...the impact of vocational education on the labor market is determined at least partially by program quality. On one level is the quality of training in the local school and the effectiveness of the school in placing graduates in employment related to their training." (Law: 1974:15). Law concluded by remarking that "it is difficult to speak with much confidence about the fate of the vocational education graduate in the labor market. Federal arrangements for obtaining placement and follow-up data appear to be rudimentary and completely dependent on the cooperation of the individual State." (Law: 1974:30). Law's statement implies that deficiencies caused by non-standardized definitions, statistical reporting and continuous follow-up may in fact affect the efficiency with which a vocational system provides its services.

The expectations may legitimately be that "job" is indeed the measure of effectiveness. A large number of vocational educators would argue that this is really only one measure of effectiveness. The evaluation of the other important influences on students is the alternative to this narrow measure. Considerable research attention has been given to this kind of evaluation.

But evaluation is complex, and the various proposed processes are controversial. It is a major expectation that federally funded programs will be evaluated. Yet to do this as well as other evaluation activities, a variety of evaluative "models" have emerged.

Under a variety of evaluative models, a diverse number and kind of evaluation techniques have been addressed. Conroy, et al. (1969) has been working toward a statewide system of evaluation in Massachusetts. There are four phases to this program: 1) Program evaluation, 2) Process-product evaluation, 3) Cost effectiveness evaluation and 4) Overall evaluation of vocational-technical education.

These and other models are quite comprehensive, but components of these models may be used in isolation. Kaufman (1969) has addressed cost effectiveness. Somers (1971) addressed product evaluation in conducting a national follow-up study to determine the effectiveness of vocational and technical program. Enninger (1964) did a Process-Product evaluation of trade and industrial education.

Each of these studies included an intensive collection of highly specific data. In being very definitive in the kind of data collected each of these studies had problems in drawing in clear conclusion. Kaufman reported a conceptual problem, "...respect to the relationship between economic concepts and theory, and the institutional (human, political and social patterns of behavior) framework surrounding education."

Enninger states, "Even when the problem is narrowed down to selecting only dimensions which have a potential for evaluating the effectiveness of vocational education, there is still considerable choice."

Somers reports, "Data collection and its potential for analysis fell short of the total objectives which the investigation set for themselves."

Each experienced conceptual problems, problems of selecting appropriate variables and methodologic problems.

The point is that evaluative research of large programs apparently never can be definitive enough to get the full measure of effectiveness.

One can go another route. One can recognize that increased refinement of procedures serves to identify the need for further refinement. Knowing that one will never reach the ultimate - the gestalt, one can deal with the gross data and draw some broad but limited generalizations. Such is the case with a number of social concerns. We have generated a "cost of living index," an "unemployment index" a "balance of trade index" and many other highly generalized statistics. It is readily understood that each of these measures are fraught with methodological problems, conceptual problems, data base problems, but they serve as extremely important indicators of whatever the situation under study is.

The concept behind these "indexes" is change over time. The measure of change is based upon carefully selected variables, shown to be important in their relationship with the whole. A major important component is consistency of reporting, that the units of measurement are the same at each reporting period, drawn from the same sample, in the same way. In this way, whatever differences exist between States on the data, those differences are essentially negated since they are consistently inherent in the data at each time the data is collected.

In a sense, we have been doing this in education. School boards constantly use the change in "per pupil cost" as an index of efficiency. The decrease in the number of dropouts is a measure of improved "holding power" of a school. Student-teacher ratio is used as a measure of quality, and there are many others. In using these examples it becomes clear that there are problems - one being the decision of what the optimal or desirable goal will be. With employment we strive for an index of zero. For cost of living we are not looking for "a" figure, but a "leveling." Similarly in dealing with per-pupil cost, we strive for minimal growth at maximum quality. For student-teacher ratio, we aim at a desirable balance between quality and cost. For dropouts we strive for zero.

But again, what is clear is that there is little empirical data on which to base the desirable per student cost. Nor is there much empirical data for the establishment of an optimal student-teacher ratio. Our concern for zero dropout is open to pholosophic arguments. Then what purpose do these items serve? For all their limitations they play significant roles in policy-making and planning. Similar other indexes in vocational education could also be important in policy-making and planning.

The data for these "indexes" in vocational education are already available. The most obvious one is "placement on job for which trained." There are several problems with this as a dependent variable. Somers (1973: 23) states: "In a number of instances our regression analysis revealed a negative relationship between labor market performances and relatedness of job training. It is clear that many students, at all school levels, were able to enjoy higher wages by moving out of their field of training when entering the labor market."

He further observed however, "The probability of satisfaction was higher if graduates were working in the field for which they received their skill preparation." The persuasive argument to use this as a variable is the expectation that the end goal of skilled training shall be a "job." (Somers: 1973:206).

A second index is that "of completion." The argument for this is that vocational monies, particularly federal monies are meant for preparing people for jobs; the higher the completion rate, the better the cost benefit relation.

A third index is enrollments. With this variable we can get some measure of at least how many lives are touched by vocational education.

With the identify of the three mentioned variables, Placement, Completion and Enrollment, one needs to look at the relationship of these to expenditures. It may seem very simplistic, and perhaps is, to measure the cost effectiveness on the basis of the relationship between placement, completion and enrollment and costs. But in its most fundamental dimension the smaller the cost per student placed, per student completed and per student enrolled, the judgement would be the higher the level of cost effectiveness.

But measuring these variables at one point in time would be misleading. What should be strived for is the continuing improvement of relationship between output and cost. Therefore the measure is not the cost per student relationship but the continual improvement of that relationship over time. One must be very careful with this variable. As cost of living rises, costs for students also rise. Over time, the optimal value will change, nationally, regionally, as well as locally.

That is a thrust of the measurement of effectiveness in this study. How do the States individually and collectively, stand on this effectiveness. Measures for each level of vocational education, high school, post high school and adult, as well as for the two categories of handicapped and disadvantaged?

But the study attempts to move further. It attempts to relate various State and local components to these cost-effectiveness data.

Given that the data is not consistent from State to State, how can this be done? Two assumptions must be made:

1) That each State reports its data in essentially the same way each year. This makes it possible to compare one year to another for each State.

2) Since States vary in size, it is necessary to observe data on a consistent unit base.

To illustrate the consistency of the reporting, correlations were made of the 1970-71 data with 1972-73 data. Some of these were reported earlier, others appear with the presentation of the data. To accommodate the difference in size of State and of programs, a per 1000 of a given population base was used.

Presentation of Effectiveness Data

Enrollment

Table 5, Appendix D illustrates the changes in enrollment, total, high school, post high school and adult levels, as well as for handicapped and disadvantaged. The data was generat-d from that developed by Project Baseline, verified by comparisons with annual federal reports. There were disparages between the two sets of data, but there was a high level of consistency. Project Baseline Data was used because: 1) it was more complete, 2) provided substantially more data in a variety of ways, and 3) had been thoroughly verified by Project Baseline staff.

Population data was drawn from the 1970 census as extracted from census data in the University of Connecticut Social Science Data Center.

The data in Table X is not as important in the magnitudes of the numbers as in the direction, i.e., the gains or losses. States obviously have shifts in priorities, distribution of monies, and other errors previously described.

TABLE X

MEANS AND STANDARD DEVIATION OF CHANGES OCCURRING BETWEEN 1970-71 AND 1972-73 OF VOCATIONAL ENROLLMENTS

	N	Mean/Change	Standard Deviation
Total/1000 population	50	4.40	9.71
Secondary/1000, 16-19 age population	50	53.20	100.99
Post secondary/1000, 20-24 population	50	19.48	37.12
Adult/1000, 25-64 age population	50	6.83	10.14
Disadvantaged/1000 population	50	-18.15*	81.19
Handicapped/1000 population	50	1.69	20.85

*Negative change resulted from USOE change in reporting.

The apparent small Total change, when compared to Secondary, Post-Aecondary and Adult, all of which show a relatively larger change, results from the fact that the Total is number enrolled/1000 population, where the others are per 1000 of specific age groups.

The decrease in Disadvantaged is the result of a federal office change in definitions during this time period. In 1973, States were asked to report only those disadvantaged in special classes which were receiving special services.

More States decreased in adult education enrollment/1000 than in other areas. Only one State showed a decrease in all categories but this was possibly caused by the installation of a new accounting system.

The mean figures show substantial increases nationally in all categories. Because of the use of different age categories for the basis of establishing ratios, one cannot conclude that one instructional level grows more or less than another institutional level.

Table 6, Appendix D displays the data for each State generated from Baseline Data. Total enrollment was developed from Vol. 1, Table 2, page 17 for 1970-71, and Vol. 3, Table 2, page 11 for 1972-73, total enrollment and dividing each by 1970 and 1972 population data, respectively. In all categories the majority of States showed an increase. Table XI summarizes the number of States which decreased and increased by level and combination of levels.

TABLE XI

NUMBER OF STATES SHOWING INCREASE AND DECREASE IN ENROLLMENT BY LEVEL AND COMBINATION OF LEVELS, 1970-71 TO 1972-73

N=50

	Decreased Enrollment	%	Increased Enrollment	%
Total Enrollment	19	38	31	62
Secondary level	8	16	42	84
Post Secondary level	6	12	44	88
Adult level	10	20	40	80
Both Secondary and Post Secondary	3	6	38	76
Secondary and Adult	0	0	30	60
Post Secondary and Adult	3	6	36	72
Secondary, Post Secondary and Adult	1	2	38	76

Placements

Placements are reported in terms of placement/1000 completions. This particular statistic is pointed to most frequently as the most important indicator of program success. It is also described as the least reliable statistic reported by the States. Considerable effort by the States has gone into the development of improved follow-up studies. Several States in recent years have developed highly sophisticated follow-up studies, others have relied on somewhat arbitrary procedures, i.e., report of teachers - some of whom were consciencious and some very casual. As to the effectiveness of a particular State in reporting placements the way data is gathered may be important in a particular State, by program area, by level, by occupation, but for general study of the nation, the data gathering process is only important as to the consistency of reporting from year to year. The consistency is significant, but not high enough to feel a great deal of confidence in the data. In correlating one year with another (1970-71 to 1972-73) the correlation is 4.99.

Understanding that the States have a wide variance in how they measure placement, if they are reporting consistently, this becomes a usable variable for measuring effectiveness. Table 7, Appendix D, generated from Baseline Data, Vol. 3, Tables 88, 89, 90, pages 118, 122, 126, indicates the growth of placements/1000 completion for total and secondary, post-secondary and adult levels. Handicapped and disadvantaged were not included because of the reporting problems. One other State deviated too much to be considered as realistic. These two were eliminated from later statistical treatment.

Table XII indicates the mean and standard deviation of changes occurring from 1970-71 for placements. Placement/1000 completion decreased at all levels except adult. Because of missing data, combinations of levels could not be determined.

Table XIII illustrates changes over the three year period by total and level.

TABLE XII

MEANS AND STANDARD DEVIATIONS OF CHANGE OCCURRING BETWEEN VOCATIONAL PLACEMENTS/1000 COMPLETION 1970-71 TO 1972-73

	N	Mean/Change	Standard Deviation
Total placement	48	-71.33	547.80
Secondary placement	44	-2.34	153.10
Post Secondary placement	42	-4.07	221.63
Adult placement	33	44.71	172.53

TABLE XIII

NUMBER OF STATES SHOWING INCREASE AND DECREASE OF PLACEMENT BY LEVEL 1970-71 TO 1972-73

	N	Decreased Placement	%	Increased Placement	%
Total level	48	21	43	27	57
Secondary level	44	23	52	21	48
Post Secondary level	42	21	50	21	50
Adult placement	33	15	45	18	55

It is quite apparent that this is not likely to be a very dependable variable. As previously mentioned, many States have been revising their data collection procedures. The experience is that as the procedures become more precise, the figures drop. This could account for much of the implied decrease in Placement, as could a declining economy.

Completion

As noted in the discussion of enrollments, States do not use the same definitions for reporting similar items. Completions are no different. Not only are there differences between States, but each State is likely to have different definitions of completions between programs, between levels, and probably even within programs. But the assumption which makes it possible to use completions is that States reported consistently over time. In correlations, there is a high level of significance, .486, yet not high enough to feel confident of it as a precise variable.

Completion/1000 Enrollment

Completion/enrollment as a measure of effectiveness is the expectation that in order for a program to have maximum impact, students should complete. The higher the completion rate, theoretically the more impact a program is having. There are counter arguments. Failure of a student to complete a program should not be construed as failure of the program, for it is certainly expected that substantial numbers of students will derive advantages from only parts of programs. Unfortunately, data on that achievement is not available.

But completion is a measure of effectiveness. As used here, it is the relationship between completion and enrollment. The goal, rather implicit, is that the higher the ratio, the more effective the program will be.

The data used to generate Table XIV was from Baseline data. Total completions for 1971 were obtained from Vol. 1, Table 15, for 1973 from Vol. 3, Table 19. These are also reported on Table 87, Vol. 3, from Table 46, Vol. 3. The figures shown in Table 8, Appendix D are the differences of placements per 1000 enrollments for each State. Twenty-two States showed a decreasing ratio, 28 an increase. The mean for all 50 States if 11.1% with a standard deviation of 70.33. This represents an improved completion rate of 11 more students/1000 enrollments completing vocational programs in 1972-73 over 1970-71.

TABLE XIV

MEANS AND STANDARD DEVIATIONS OF CHANGES IN COMPLETION/1000 ENROLLMENT 1970-71 AND 1972-73

	N	Mean	Standard Deviation
Total completion	48	11.18	70.33
Secondary and Post-Secondary Completions	48	10.64	63.51

Since adult completions are so diversified, State to State, these were removed and the combined Totals of secondary and post-secondary were developed (Table 9, Appendix D.)

The means for all States (Table XIV) show a consistent upward change for both the total completions as well as the completions of the combined secondary and post-secondary completions.

On the combined secondary and post-secondary completions, 19 States showed a decrease while 29 showed an increase.

The difference between the two completion ratios suggested that the combined secondary and post-secondary completions be used for establishing placement ratios for secondary and post-secondary. Adult completions were used to establish a ratio with adult placements.

Summary of Effectiveness Data

The measure of effectiveness resolved itself down to three primary concerns: 1) enrollments, 2) placements, and 3) total completion. Each of these were looked at in terms of total, secondary, post-secondary and adult. Handicapped and disadvantaged were included, but because of serious reporting areas had to be dropped for later treatment.

The measure used in each instance was a "change" factor; that is, the extent of growth or decline in enrollments, completion or placements from 1970-71 to 1972-73.

The data represents "change" per thousand. Each variable was represented by a unique ratio.

Total enrollment/1 000 = Total enrollment per 1000 population.
Secondary enrollment/1000 = Secondary enrollment per 1000, 15-19 age group.
Post-secondary enrollment/1000 = Post secondary enrollment per 1000, 20-24 age group.
Adult enrollment/1000 = Adult enrollment per 1000, 25-64 age group.
All placement variables = Total enrollment per 1000 reported completions.
Total completions = Total completion/1000 enrollment.

In each case, these figures were established for the two years, 1970-71, 1972-73. The 1970-71 figures were subtracted from the 1972-73, showing a change factor.

CHAPTER V

DATA TREATMENT

The whole thrust of this study has been to bring together certain elements, to determine whether any interrelationships exist. The three concerns have been: 1) State administration, 2) delivery systems, and 3) effectiveness. Each of these has been discussed in preceeding chapters. Within each chapter certain observations have been made. How is it possible to interrelate these three major concerns? It never was assumed to be easy. It only seemed possible with the newer statistical techniques made increasingly powerful with the computer.

But the computer is not of itself a solution. Certain subjective judgements must be made, logical hypothesis have to be developed, and appropriate statistical tools need to be selected.

To the extent these conditions were met, the study has validity.

Certain assumptions and conditions regarding statistical data were felt to be important.

a) The common unit is the State.

b) For enrollment, completion, placement and staff, the comparative units were per 1000 (of a common base) to eliminate differences in State size.

c) Since there was a high level of discrepency in reporting between States, an assumption was made that States reported with high consistency one year to the next. That this assumption is reasonably valid is shown in the high correlation between the 1970-71 reports and the 1972-73 reports in Table XV. The negative correlation of handicapped was the result of a federal change in reporting procedures, thus this variable was used sparingly in statistical treatment. The low correlation of disadvantaged enrollment left this suspect, so it was used sparingly.

Since the States seem to report with a very high degree of consistency, States could be compared on the extent to which they "change over time." This is the most important device used in statistical treatment. Comparisons, correlations and other treatment use a "change factor," the difference between 1970-71 and 1972-73 data. Table XV shows that there is a high degree of correlation between the two reporting years. Only two comparisons were not significant at the .01 level. The high correlation indicates a high degree of consistency in reporting between the two years.

TABLE XV

CORRELATIONS OF SELECTED STATISTICAL DATA 1970-71 WITH 1972-73

	Total Inst.Exp. /pupil	Enroll. /1000	Total Fed. Exp. /pupil	Placement /1000 Completion
	N=50	N=50	N=50	N=49
Total	.850	.930	.744	.698
Secondary	.880	.811	.433	.471
Post Secondary	.787	.809	.826	.626
Adult	.599	.901	.677	.688
Handicapped	-.146	.728	N.A.	N.A.
Disadvantaged	.754	.234	N.A.	N.A.

The use of data in this study has to meet the following conclusions:

1. That there was reason to believe it could interact with other data.
2. The data could be established on comparable basis between States.
3. The data was sufficient in quality and quantity to permit statistical treatment.
4. The data had to be reducible to common units.

The first of these is obviously a matter of judgement, supported by findings in the literature previously discussed.

The second required a basic assumption: That States reported similarly from one year to the next. This effectively reduced the inconsistency of data between States. The statistical figures were reduced to common units and the change which occurred between 1970-71 and 1972-73 became the statistic. The difference between these two years represented a change factor. A State would show a growth or decline based on all the statistics being used.

The third consideration was merely a matter of whether there was missing data or not. If data from five States was missing for a variable, that variable was dropped.

Lastly, data was reduced to a "per thousand" to eliminate differences in size of States. The most frequently used base was population, but other base units were established as described later.

State Department Variables

Swanson's study in particular gave considerable insight into State administration. The major problem, looking at this report and others, such as Koble (1973) and discussions about State departments by Rice (1968) seemed to be narrowed down to structure and process. Structure included:

1. The nature of the State board
    a. how selected and
    b. whether it was serving several roles or
    c. whether it was a separate board serving just vocational education.
2. The selection of chief State school officer in States where the State board of education was serving a dual role.
3. The relative position of the State director to the State board.
4. State board line and staff organization.
5. Variety of activities performed by the State staff and
6. Size of the State staff.

Data on line and staff was obtained and categorized, but because of the large deviation in actual organization, it could not serve as a functional variable.

A dimension of process is the distribution of funds. All States have federal funds distributed on a formula basis. Therefore this could be used as a variable. States also reported local/State funds. While there are considerable problems associated with this device it was appropriate to the use of this as a variable.

Data which couldn't be used for statistical purposes was used in preceeding chapters for descriptive purposes.

The variables used for statistical treatment included:

1. Role of the State board of vocational education (multiple purpose or single purpose.)
2. State board selection (elected partisan, non-partisan, appointed governor, State board - other, constituent groups or by virtue of position.)
3. The relative chief of the States director of vocational education to the State board (serves as executive officer, reports through a chief State school officer, reports through more than one State officer.)
    a. Federal institution expenditures per pupil for the 1) total program, 2) secondary, 3) post-secondary, and 4) adult levels.

b. Total instructional per pupil expenditure-federal, State and local for 1) total program, 2) secondary, 3) post-secondary, 4) adult.

c. The ratio of federal expenditures to State/local expenditures.

A breakdown of expenditure by program area is available but was not done because of the complexities of treatment and of reporting. In addition, the procedure needed to be tested before attempting further breakdowns. Handicapped and disadvantaged expenditures were originally included, but their treatment was limited when it was found that some extensive report changes had been made during the period under study.

Delivery Systems Data

This data was accumulated primarily by questionnaire and was concerned with structure and role (See Appendix F). There were difficulties associated with the questionnaire described in Chapter III. Forty-two States responded, but for most data, only 37 States could be used. The data sought was: 1) definition of facilities identifying average size, level served (secondary, post-secondary, adult) and information on students with special needs, 2) process of board selection, 3) level of board (State, regional, local), 4) kind of cooperation with other agencies.

Virtually all this data was used for descriptive purposes in Chapter III.

Other data was obtained from a variety of sources. Statistical data was checked against other similar data, including: 1) number of schools offering vocational education, 2) number of area vocational schools, 3) number of vocational teaching staff. These were used in statistical treatment with the exception of area vocational schools, which proved too diverse in levels and structure to categorize for treatment purposes.

The resulting variables were:

1. Board level (local, regional, State)
2. Board selection (elected, appointed)
3. Total vocational staff/1000 population
4. Vocational facilities
    a. Total
    b. Secondary
    c. Post-secondary
    d. Adult
    e. Other

Program Effectiveness Data

This variable is the most difficult variable to deal with. Effectiveness can be as simple as placement, or as complex as success of students by job category. It could include curriculum, staff, faculty and other diverse concerns.

The complexities had to be reduced to a minimum. The primary concern was with quantity (how many students served) and quality (the completion and placement of students). An effort was made to deal with labor market information. Its reliability is just too difficult to establish to permit its use.

Another difficult variable to deal with is follow-up information. Its reliability varies tremendously from State to State. But it also varies from year to year as each State continues to improve on its data gathering techniques.

After a number of false starts, high levels of inconsistency in statistical output were discovered. Thus certain data, particularly manpower was reluctantly dropped. The variables which were used were:

1. Enrollment
   a. Total - per 1000 population
   b. Secondary - per 1000 of total enrollment of 15-19 age group
   c. Post-secondary - per 1000 of total enrollment of 20-24 age group
   d. Adult - per 1000 of total enrollment of 25-64 age group.
2. Placement
   a. Total - per 1000 completion
   b. Secondary - per 1000 completion
   c. Post-secondary - per 1000 completion
   d. Adult - per 1000 completion.
3. Completions - total per 1000 enrolled.

(Total completions, while used as a variable was primarily used to establish a relationship between placements and completions thus permitting comparisons between the various levels.)

It was previously established that the independent variables could be categorized as providing information of either: 1) costs, 2) administrative and staffing patterns, 3) types of delivery systems. Normally, it is appropriate to use correlational procedures to "cull out" from all possible variables the best potential independent variables. In the present case such a procedure was inappropriate since: 1) the total number in the sample was small. To use large numbers of variables would reduce the significance of the findings. 2) the data were both parametric and non-parametric. Therefore, each major category was examined using an appropriate procedure to identify the best potential predictive variables in each category.

CHAPTER VI

DATA PRESENTATION

The treatment of the data consisted of an analysis of independent variables which, on the basis of their correlation with dependent variables would result in an interaction resulting in predictability. Some subjective judgements were applied to further delimit the usable variables, since with a relatively small number of subjects (50 States) limited numbers of variables could be used.

The Statistical Technique

The statistical device used was the stepwise regression analysis. Non-parametric data was dicotomized, for example the chief State school officer was divided into three variables, each dicotomized 1 yes, 0 no, the variables being: a) appointed by governor, b) appointed by State board, c) elected by popular vote.

Variables which dealt with "change" factor was raw data. There are numerous problems with "change" variables, more commonly called "gain score." A way of treating some of the inherent problems is to reduce the raw scores to "residual gain" scores, a process of evaluation the "post score" (the latter) from the first. This procedure was not used, because of some computer programming problem, the complexity of handling the data, and the difficulty of explaining and interpretation.

These two statistical problems obviously weaken the results and do not permit a clear statement of findings. Plans are for these problems to be addressed at a later point in time. The findings however, are not "suspect." They are just not as "clean," or as powerful as they might be.

The compromise of not using the residual gain score does not diminish the major intent of the study which is to explore the techniques. The findings even with these limitations indicate a very strong potential for more meaningful findings using this technique.

The Procedure

All independent variables could not be used with each of the dependent variables. From a correlation matrix the variables with the highest correlations to each of the dependent variables were selected.

A consideration had to be given to whether the correlations were reasonable (should adult expenditures be used with the dependent variable of secondary placements?) so some relative high correlates were eliminated.

An additional concern was whether independent variables which were used with all dependent variables would appear as predictors with regularity. Therefore, in all analysis the variables total federal per pupil expense, total per pupil expense and position of State director were used. In addition, per pupil expenditures for a given level were used - total secondary per pupil expenses and secondary federal per pupil expense was used in analysis of secondary enrollments and placements.

The nine Stepwise Multiple Regression analyses are presented below:

1. Total Enrollment per 1000 Populations.

Analysis of the correlation matrix and judgements of expected interrelationship resulted in the selection of six variables. These are displayed in Table XVI.

TABLE XVI

CORRELATIONS OF INDEPENDENT VARIABLES ASSOCIATED
WITH DEPENDENT VARIABLE CHANGE IN
TOTAL ENROLLMENT/1000 POPULATION
1970-71 TO 1972-73
N=50

	Total Enrollment	Mean	Standard Deviation
Total expenditure change	-2193	11.99	85.08
Total Federal expenditure change	-2448	1.21	13.85
CSSO appointed	2527	0.40	0.49
Staff/1000 population	5071*	-0.04	0.30
VE Director - 0 intermediary	-0538	0.18	0.39
VE Director - 1 intermediary	-0230	0.46	0.50
VE Director - 2+ intermediaries	0670	0.36	0.48
Total enrollment/1000 population		4.40	15.60

The strongest positive correlation with total enrollment is Staff. This is demonstrated again on Table XVII where staff was the strongest predictor responsible for 50% of the variance. The three independent variables which contributed the most to the dependent factor were staff, followed by total federal per pupil expense and an appointed chief State school officer. Fifty-nine percent of the variance is accounted for by these three variables with a significant F ratio.

TABLE XVII

INDEPENDENT FACTORS WHICH BEST ACCOUNT FOR VARIATIONS IN TOTAL ENROLLMENT PER 1000 POPULATION CHANGE 1970-71 TO 1972-73

Step No.	Variable Entered	Multiple R	S.E. Est.	df	F	Beta	S.E. Beta	F Ratio
1.	Staff/1000 Population	.507	13.585	48	16.618	.507	.124	16.618**
2.	Total Federal/Pupil Expenditure	.571	13.080	47	11.350	-.262	.120	4.776
3.	CSSO Approved	.589	13.008	46	8.159	.152	.122	1.524

2. Total Completions/1000 Enrollments

There are some inherent problems in the comparisons of expenditures and enrollments. The expenditure figure is a per pupil cost arrived at by dividing expenditure by enrollment. Because of this there should be, and generally is, a significant or near significant relationship between these two variables. Because expenditures have risen more rapidly than enrollment, the correlation is frequently negative.

Of the six independent variables used, none of the correlations was significant (Table XVIII). The variables elected chief State school officers and vocational directors who report through two or more intermediaries show a negative correlation.

TABLE XVIII

CORRELATIONS OF INDEPENDENT VARIABLES ASSOCIATED
WITH DEPENDENT VARIABLE CHANGE IN
TOTAL COMPLETION/1000 ENROLLMENT
1970-71 TO 1972-73
N=50

	Total Completion	Mean	Standard Deviation
Appointed State board	2487	0.31	0.47
CSSO elected	-1323	0.58	0.50
Staff/1000 population	2462	-0.02	0.28
VE Director - 0 intermediary	1754	0.19	0.39
VE Director - 1 intermediary	-2317	0.48	0.50
VE Director - 2+ intermediaries	1002	0.33	0.48
Total completions		11.18	70.33

The regression analysis is quite weak, the variables accounting for only 39% of the variance, with the elected chief State school officer as the first predictor variable followed by the vocational director with one intermediary and finally, staff. (Table XIX)

TABLE XIX

INDEPENDENT FACTORS WHICH BEST ACCOUNT FOR VARIATIONS IN TOTAL COMPLETIONS PER 1000 POPULATION CHANGE 1970-71 TO 1972-73

Step No.	Variable Entered	Multiple R	S.E. Est.	df	F	Beta	S.E. Beta	F Ratio
1.	Elected State Board	.249	68.856	46	3.034	.249	.143	3.034*
2.	V.E. Director One Intermediary	.3531	67.246	45	3.205	-.251	.139	3.229*
3.	Staff/1000 Population	.3918	66.877	44	2.660	.175	.143	1.498

3. Total Placement/1000 Completion.

None of the independent variables show a significant correlation with the dependent variable (Table XX). When tested in a regression analysis the multiple regression of 18 was very low with one variable accounting for any variance (Table XXI). There was no significant F ratio.

TABLE XX

CORRELATIONS OF INDEPENDENT VARIABLES ASSOCIATED
WITH DEPENDENT VARIABLE CHANGE IN
TOTAL PLACEMENT/1000 COMPLETION
1970-71 TO 1972-73
N=48

	Total Placement	Mean	Standard Deviation
Total expenditure/pupil	0347	11.17	86.76
Secondary/pupil expenditure	0109	9.02	103.00
Federal expenditure/pupil	0566	1.07	14.08
Dual role State board	-0860	0.83	0.38
Staff	0713	-0.02	0.28
VE Director - no intermediary	1200	0.19	0.39
VE Director - 1 intermediary	-1842	0.48	0.50
VE Director - 2+ intermediaries	0958	0.33	0.48
Total placement		-71.33	547.80

TABLE XXI

INDEPENDENT FACTORS WHICH BEST ACCOUNT FOR VARIATIONS IN TOTAL PLACEMENT PER 1000 COMPLETION CHANGE 1970-71 TO 1972-73 N=48

Step No.	Variable Entered	Multiple R	S.E. Est.	df	F	Beta	S.E. Beta	F Ratio
1.	State Director Reporting Through One Intermediary	.18	549.2	47	1.6	-.184	.145	1.627

4. Change in Secondary Enrollments/1000, 15-19 Age Population.

All the per pupil expense variables show a significant negative correlation with secondary enrollments. This is also the only dependent variable which shows a negative correlation with staff. Staff declined while secondary enrollments rose. The variable State director with one intermediary also shows a negative correlation with secondary education. (Table XXII).

TABLE XXII

CORRELATIONS OF INDEPENDENT VARIABLES ASSOCIATED
WITH DEPENDENT VARIABLE CHANGE IN
SECONDARY ENROLLMENT/1000, 15-19 POPULATION
1970-71 TO 1972-73
N=50

	Secondary Enrollment	Mean	Standard Deviation
Total/pupil expenditure	-3811	11.99	85.08
Total secondary/pupil expenditure	-3909	11.39	101.61
Total federal expenditure/pupil	-3553	1.21	13.85
Dual purpose State board	2918	0.84	0.37
Staff/1000 population	-1145	-0.04	0.32
VE Director - no intermediary	-2408	0.18	0.39
VE Director - 1 intermediary	1497	0.46	0.50
VE Director - 2+ intermediaries	0372	0.36	0.48
Total secondary enrollment		53.23	100.99

When placed in a regression analysis (Table XXIII), the expenditure per pupil shows the highest loading. The vocational board which also serves as a State board of education loads next highest, followed by federal per pupil expenditure and then by staff. The loading is moderately high.

TABLE XXIII

INDEPENDENT VARIABLES WHICH BEST ACCOUNT FOR VARIATIONS IN SECONDARY ENROLLMENT PER 1000, 16-19 POPULATION CHANGE 1970-71 TO 1972-73

Step No.	Variable Entered	Multiple R	S.E. Est.	df	F	Beta	S.E. Beta	F Ratio
1.	Total Secondary Expenditure/Pupil	.3909	93.915	48	8.661	-.391	.133	8.661
2.	Vocational Board Same as State Board	.4596	91.580	47	6.294	-.244	.130	3.479
3.	Total Federal Expenditure/Pupil	.5112	89.578	46	5.427	-.281	.159	3.125
4.	Staff/1000 Population	.5277	89.511	45	4.344	-.135	.131	1.069

5. Changes in Secondary Placements/1000 Completion.

This analysis is hampered by considerable missing data. Only 34 States were included. There are no significant single correlations. One variable which shows a moderate negative correlation is local boards of control. The extent to which this is caused by missing data is unknown but missing data could be a factor. (Table XXIV).

TABLE XXIV

CORRELATIONS OF INDEPENDENT VARIABLES ASSOCIATED
WITH DEPENDENT VARIABLE CHANGE IN
SECONDARY PLACEMENT/1000 COMPLETION
1970-71 TO 1972-73
N=34

	Secondary Placement	Mean	Standard Deviation
State Director - no intermediary	2977	0.18	0.39
State Director - 1 intermediary	-0982	0.53	0.51
State Director - 2+ intermediaries	-1414	0.29	0.46
Staff	1034	-0.05	0.30
Local board of control	-2117	0.47	0.51
Secondary placement		-10.59	164.02

The regression analysis is quite weak with the variable State director with no intermediary being the strongest loading factor, and strengthened by the negative correlate of local board of control. (Table XXV).

Because of the small sample and the relatively small multiple R, the analysis is not dependable.

TABLE XXV

INDEPENDENT VARIABLES WHICH BEST ACCOUNT FOR VARIATIONS IN SECONDARY PLACEMENT PER 1000 COMPLETION CHANGE 1970-71 TO 1972-73

Step No.	Variable Entered	Multiple R	S.E. Est.	df	F	Beta	S.E. Beta	F Ratio
L.	V.E. Director--No Intermediary	.2977	159.01	32	3.112	.298	.169	3.112
2.	Local Board of Control Secondary Programs	.3454	158.10	31	2.100	-.177	.169	1.081

6. Change in Post Secondary Enrollment per 1000, 25-65 Age Population.

All but two of the selected factors correlate negatively with dependent variables, non significant (Table XXVI). The total post-secondary per pupil expenditure was the first variable put in the regression analysis, followed by total federal per pupil expenses and State vocational directors of education with no intermediaries. There is only moderate predictability (34%) using these variables (Table XXVII).

TABLE XXVI

CORRELATIONS OF INDEPENDENT VARIABLES ASSOCIATED
WITH DEPENDENT VARIABLE CHANGE IN
POST SECONDARY ENROLLMENT/1000, 24-64 POPULATION
1970-71 TO 1972-73
N=50

	Post Secondary Enrollment	Mean	Standard Deviation
Total expenditure	-0908	11.99	85.08
Post secondary/pupil expenditure	-2419	55.60	394.69
Total federal/pupil expenditure	-2320	1.21	13.85
Post secondary federal/pupil expenditure	-2135	-15.49	77.67
VE Director - no intermediary	-1423	0.18	0.39
VE Director - 1 intermediary	0703	0.46	0.50
VE Director - 2+ intermediaries	0408	0.36	0.48
Post secondary enrollment		19.48	37.12

TABLE XXVII

INDEPENDENT VARIABLES WHICH BEST ACCOUNT FOR VARIATIONS IN POST SECONDARY ENROLLMENTS PER 1000, 19-24 POPULATION CHANGE 1970-71 TO 1972-73

Step No.	Variable Entered	Multiple R	S.E. Est.	df	F	Beta	S.E. Beta	F Ratio
1.	Total Post Secondary/Pupil Expenditures	.2419	36.392	48	2.985	-.242	.140	2.985*
2.	Total Federal/Pupil Expenditures	.3130	35.996	47	2.553	-.201	.140	2.056
3.	V.E. Director--No Intermediary	.3445	35.967	46	2.066	-.144	.139	1.082

7. Change in Post Secondary Placement/1000 Pupil Enrolled in Post Secondary Education.

The elected State board of education had the strongest relationship, though negative, with this variable. (Table XXVIII). This factor was loaded first in the analysis followed by total per pupil expenditure. These two variables represented the maximum loading with a moderately high (40%) predictability (Table XXIX).

TABLE XXVIII

CORRELATIONS OF INDEPENDENT VARIABLES ASSOCIATED
WITH DEPENDENT VARIABLE CHANGE IN
POST SECONDARY PLACEMENT/1000, 19-24 POPULATION
1970-71 TO 1972-73
N=43

	Post Secondary Placement	Mean	Standard Deviation
Total/pupil expenditures	-2063	7.71	90.70
State board appointed	-3437	0.30	0.46
State board elected	3088	0.67	0.47
VE Director - no intermediary	-0522	0.16	0.37
VE Director - 1 intermediary	0360	0.51	0.51
VE Director - 2+ intermediaries	0027	0.33	0.47
Post secondary placement		-4.07	221.63

TABLE XXIX

INDEPENDENT VARIABLES WHICH BEST ACCOUNT FOR VARIATIONS IN POST SECONDARY PLACEMENT PER COMPLETION CHANGE 1970-71 TO 1972-73

Step No.	Variable Entered	Multiple R	S.E. Est.	df	F	Beta	S.E. Beta	F Ratio
1.	Elected State Board	.3437	210.64	41	5.495	-.344	.147	5.495**
2.	Total/Pupil Expenditures	.4015	207.98	40	3.846	-.208	.145	2.055

8. Changes in Adult Enrollment/1000, 25-64 Age Population.

Federal per pupil expenditures correlated significantly with this variable in a negative direction (Table XXX).

It also loaded highest in the regression analysis, but only two variables were identified as contributing the maximum predictability. Total adult per pupil expenditures was the second variable. The two variables accounted for 36% of the variance (Table XXXI).

TABLE XXX

CORRELATIONS OF INDEPENDENT VARIABLES ASSOCIATED
WITH DEPENDENT VARIABLE CHANGE IN
ADULT ENROLLMENT/1000, 25-64 POPULATION
1970-71 TO 1972-73
N=50

	Adult Enrollment	Mean	Standard Deviation
Total/pupil expenditures	-1130	11.99	85.08
Adult/pupil expenditure	-0946	-4.86	48.71
Total federal/pupil expenditure	-3287	1.21	13.85
Total federal adult/pupil expenditure	-2533	1.58	12.46
VE Director - no intermediary	0824	0.36	0.48
VE Director - 1 intermediary	-0185	0.18	0.39
VE Director - 2+ intermediaries	-0651	0.46	0.50
Adult Enrollment		6.83	10.14

TABLE XXXI

INDEPENDENT VARIABLES WHICH BEST ACCOUNT FOR VARIATIONS IN ADULT ENROLLMENT PER 1000, 25-64 POPULATION CHANGE 1970-71 TO 1972-73

Step No.	Variable Entered	Multiple R	S.E. Est.	df	F	Beta	S.E. Beta	F Ratio
1.	Total Federal/Pupil Expenditure	.3287	9.674	48	5.815	-.329	.136	5.815**
2.	Total Adult/Pupil Expenditure	.3563	9.672	47	3.415	-.149	.147	1.019

9. Change in Adult Placement/1000 Completions.

Because of the small N, the analysis has limited generalities. Only staff showed a strong correlation (Table XXXII). It and the elected State board were the two predictor variables entered into the formula with a multiple R of .41 (Table XXXIII).

TABLE XXXII

CORRELATIONS OF INDEPENDENT VARIABLES ASSOCIATED WITH DEPENDENT VARIABLE CHANGE IN ADULT PLACEMENT/1000 COMPLETION
1970-71 TO 1972-73
N=33

	Adult Placement	Mean	Standard Deviation
Total/pupil expenditure	0650	-2.29	90.90
Adult/pupil expenditure	0412	0.63	52.07
Federal/pupil expenditure	0132	0.46	15.98
Federal adult/pupil expenditure	-1522	3.52	14.33
Elected State board	1839	0.33	0.48
Dual purpose board	2747	0.85	0.36
VE Director - no intermediary	0145	0.15	0.36
VE Director - 1 intermediary	1326	0.61	0.50
Staff	-3576	-0.02	0.29
Ratio of Federal, State expenditures	1358	0.14	1.03
Adult Placement		46.06	175.05

TABLE XXXIII

INDEPENDENT VARIABLES WHICH BEST ACCOUNT FOR VARIATIONS IN ADULT PLACEMENT PER 1000 COMPLETIONS 1970-71 TO 1972-73

Step No.	Variable Entered	Multiple R	S.E. Est.	df	F	Beta	S.E. Beta	F Ratio
1.	Staff/population	.3576	166.09	31	4.546	-.356	.168	4.546
2.	Elected State Board	.4161	164.39	30	3.142	.213	.166	1.644

CHAPTER VII

FINDINGS AND CONCLUSIONS

The study was exploratory. Only very general research questions were asked: 1) could available data be used in a meaningful way to study various factors associated with outcome, and 2) can a technique be found to explore interrelationships of State administration and school delivery systems?

The variety of interrelationships which could be explored was very diverse and complex. The process of sifting the data down was very time consuming. The ultimate selection of variables that appear would seem to be the most likely ones to be used for analysis on the basis of experience. That the most likely ones did emerge represents a valuable finding, tending to verify some frequently accepted measurement variables.

But even with the relatively simple variables used, the way to use them and the variety of ways they could be used posed a problem. To get as clear a picture as possible as to the utility of variables, simple procedures were used. Simple listings, correlations and multiple stepwise regression were used.

All variables could not be used in the regression model for with only 50 N the number of variables which could reasonably be used, is limited.

Findings

General

The findings, while suggestive, are inconclusive. Of importance are certain trends and clues which would suggest the need and potential for much further investigation. Given more time, the findings might be much clearer. It appears that present data does have a utility in interrelating very general variables.

However, if there were large shifts in categorical funding, or changes in reporting procedures by the federal government, the technique used here would be invalid for it assumes consistency from year to year. The inability to study handicapped and disadvantaged resulted because of changes in reporting procedures.

The procedures used suggest that with more careful delimiting of variables, a more effective "screening" of variables and data, the findings could be more meaningful. The technique has a potential utility for showing interrelationships between variables.

While the data base for each State is unique to that State, the data can be used for analytical and inferential purposes and suggests that there does not have to be a nationally uniform data collection procedure to conduct national studies. As a result of our experience what needs to be done is to get a better understanding of what certain data represents. For example, many States report adult completion and adult placements, many do not, yet all have adult vocational programs. If it were known what the criteria of the reporting States was it would be helpful. It would also be helpful to know why other States have not reported. This information would make it possible to interpret the data which is available and explain why it is limited to some States.

Specific Findings

1. The dependent variable to which the independent variable related best was enrollment. Placement is not a good dependent variable. This is not unexpected for two reasons: a) the distribution of money by States is quite directly related to enrollment and thus only remotely associated with placement, b) placement figures are not as consistently reported on a yearly basis as other variables. This makes the interaction of expenditures with what is expressed as the "output" very hard to identify. The general impression from the data is that there are relatively few variables which could strongly be related to placement. It is doubtful that even enrollment could be a useful predictor of placement. There is great variance among States on this variable.

2. There is an implied relationship between State administrative structure and outputs in vocational education. The way a board is selected, the way a chief State school officer is selected, the difference between separate vocational boards and State boards with vocational board designation, the role of the State director, each appears to have some effect on enrollment, though the dimensions are not clear. It appears that: a) State directors who are in State boards of education and report through one or more intermediaries have a larger growth at the secondary vocational level than State directors with direct communication with the policy-making body, b) the data suggests that the other above mentioned variables have some predictive value, but since they were not placed in all treatments no conclusions can be drawn.

3. Expenditures are generally the best predictors, as would be expected since they are directly and purposely related to enrollment. In most cases these were negatively correlated with enrollment. What is probably more important is that of nine statistical procedures, expenditures did not appear in four tables and only twice as major predictors in the other five tables. While both enrollments and expenditures increased nationally over the time studied, the internal relationships were more strongly in the inverse direction than in the positive direction. There are some internal interactions of the data which need to be studied. It is not a simple increase of one variable and decrease of another as the negative correlation suggests.

4. Delivery system data needs considerable attention. This is the most poorly reported data dealt with. An effort was made to incorporate this into the study. All variables studied with the exception of staff failed to materialize as useful variables. It is not an easy area to study. The diversity of definitions, between States and the variations which can exist within a State, just in terms of such things as a "board of control" makes it difficult to categorize variables except in a most general way. Other variables such as number of schools serving various levels or categories of students are not clearly enough defined to permit utilization at this time. Even "area vocational schools" have different definitions between and within States. It could not be used as a variable since even in a general way, a school may be at one or some combination of level (secondary, post-secondary and/or adult.)

This does not suggest the need for uniformity. Indeed States do have to organize delivery systems in a variety of ways to meet an array of problems. But some in-depth study needs to be undertaken to identify alternative strategies for maximum delivery.

5. The limited use of State department data presented another problem since there is no uniformity of structure, services or processes. This is related in part to the fact that the expenditure and student data is generally reported in response to federal vocational laws and funding. Many State divisions of vocational education provide services beyond those associated with federal vocational funds.

Related Findings

Expenditure (1970-71 to 1972-73)

1. There has been a general increase in federal expenditures, particularly at the secondary level with a rather substantial drop at the adult level.

2. There has been a more substantial increase in total per pupil expenditure particularly at the post-secondary level, the bulk of the increase is from State and local funds.

3. There has been a decrease in the ratio of State/local to federal expenditures for both disadvantaged and handicapped student output data (1970-71 to 1972-73).

1. There has been a growth in enrollments, primarily at the secondary level.
2. There has been a corresponding increase in completions.
3. There has been a general decline in placements at all levels but adult.

These findings are a reflection of the national situation. They do not apply to each State. The decrease in placements was limited to less than half the States. Economic conditions undoubtedly contributed to this particular finding. There appears to be a continual emphasis at the secondary level in terms of enrollments, yet a substantially larger expenditure at the post-secondary level.

Conclusions

The study did not achieve its idealistic goal, the identification of variables which would predict a variety of outcomes. It was too large a goal for the short time allowed. The study does suggest that that goal is possible, but much work needs to be done.

The variables used need to be "cleaner," they are not as precise as they could be. They are however, representative of the kinds of variables which can be used in further similar research.

This study has just rippied the surface of what still seems possible. As indicated, there are difficult problems which need to be addressed:

1. Clearer definitions by States of what their data represents.
2. A strong attempt to describe delivery systems, the underlying rationale, and their attributes.
3. The encouragement of better uses of existing statistical data with special efforts to synthesize data to permit better State planning.
4. A more careful look at placement data, particularly if this is to be used as the prime variables to measure effectiveness.

There has been a mass of data accumulated which could not be incorporated into this report. Several more descriptive and analytical reports could well be generated from this data. The data accumulated, analyzed and prepared for this study should be further analyzed - the potential utility has resulted in exploratory findings, exemplary of what is possible. Further refinement and analysis could bring out much more meaningful and specific findings.

BIBLIOGRAPHY

Articulation of Vocational Education Planning with Comprehensive State Planning. Columbus: Center for Vocational and Technical Education, Ohio State University, 1971.

Assessment Instrument for Arizona Vocational Education Programs. Phoenix: Arizona State Department of Education, Division of Vocational Education, September, 1973.

Bice, Carry R. and Ralph Brown. Selected Information about Vocational-Technical Education in Tennessee for the School Year 1972-73. Nashville: Tennessee State Department of Education, Division of Vocational-Technical Education, 1973.

Bloom, Benjamin S., Hastings, T. J., Modaus, G. F., Handbook on Formative and Summative Evaluation of Student Learning, McGraw-Hill, N.Y., 1971.

Bowen, Howard R. and Stephen K. Bailey. The Effective Use of Resources: Financial and Human. Presented at the AGB National Conference on Trusteeship, New Orleans, LA, April 30, 1974.

Brandon, George L. An Appraisal of the Manpower Training Programs Established by Congress in the 1960's. Project Baseline Supplemental Report. Penn State University, August 30, 1974.

Campbell, Roald F. The Organization and Control of American Schools. Columbus: Charles E. Merrill Books, Inc., 1965.

Changing Education Scene. Proceedings of the Seventh Annual National Vocational Technical Teacher Education Seminar, Ohio State University, Columbus, January, 1974.

Coe, Burr, et al. "What is Quality Vocational Education?" in Gordon F. Law (ed.) Current Concepts in Vocational Education, p. 191.

Composite Evaluation Report for Occupational Education in the State of Illinois, Fiscal Year 1972. Illinois State Board of Vocational Education and Rehabilitation, Springfield, 1972.

Conant, James B. The American High School Today. New York: McGraw Hill, 1959.

Connecticut Labor Situation. Hartford: Employment Security Division, Connecticut Labor Department, September, 1974.

Conrad, William J. (ed.) , A Guide to Evaluation: Massachusetts Information Feedback Systems for Vocational Education. Massachusetts Department of Education, Woburn, Mass., 1969.

Coster, John K. A Preliminary Appraisal of Concerted Services in Training and Education in Rural Areas. Raleigh: Center for Occupational Education, North Carolina State University, 1967.

Development of a Research Instrument Which Can Assess the Occupational and Educational Status of Former Occupational Enrollees of North Carolina Community Colleges and Technical Institutes. Occupational Education Research Project, Final Report. Guilford Technical Institute, Jamestown, N.C., June 30, 1972.

Director of National Association of Trade and Technical Schools 1973-74. Director of Accredited Private Trade and Technical Schools, Washington, D.C.

Dochtermann, Clifford L. and Barron B. Beshvar. Directions to Better Education: Suggestions for Improving Education in a Changing Society. Denver, Colorado, 1970. p. 23-25.

Drews, Donald W. A Planning System for the Implementation of Section 553, Education Professions Development Act, in State Agencies for Vocational Education. National Center for Occupational Education, Raleigh, N.C., 1972.

Edsall, Richard H. A Guide for Local Program Evaluation. Columbus: Center for Vocational and Technical Education, Ohio State University, 1973.

Enninger, Max V. The Process and Product of T&I High School level Vocational Education in the United States. American Institute for Research, Pillsbury Review, 1965.

Evaluation: Coordinated Vocational Academic Education. (1969-1970 and 1970-71). Athens: Georgia University, Division of Vocational Education, 1971.

Evaluation of Oklahoma's Exemplary Vocational Education and Occupational Orientation Program Tulsa Public Schools 1970-73. Final Evaluation Report, Fall, 1973.

Evaluation of Public Occupational Education in Massachusetts. Boston: Massachusetts Advisory Council on Vocational-Technical Education, November, 1972.

Evaluation Report--An Interaction Simulation: Coordinated Local-State Vocational Education Planning. Research and Development Series No. 73. Columbus: Center for Vocational and Technical Education, Ohio State University, May 1972.

Evaluative Criteria for the Evaluation of Secondary Schools. Washington, D.C.: National Study of Secondary School Evaluation, 1969.

Farmer, James A., Jr., J. David Deshler and Robert C. Williams. Chartering Process. Graduate School of Education, UCLA, 1973.

Feldman, Marvin J. The Place of Technical Education in the Total Educational System. Presented to Technical Education Division, American Vocational Association, Atlanta, Georgia, December, 1973.

Garbin, A. P. and Derrald Vaugh. Community-Junior College Students Enrolled in Occupational Programs: Selected Characteristics, Experiences and Perceptions. Columbus: Center for Vocational and Technical Education, Ohio State University, September, 1971.

Giordano, A. M. A History of Federal Vocational Education Legislation in the Twentieth Century. Washington, D.C.: Education and Public Welfare Division, Congressional Research Service Library of Congress, February, 1974.

Harris, Sam P. State Departments of Education, State Boards of Education, and Chief State School Officers. U. S. Government Printing Office, Washington, D.C.: 1973, 235 p.

Harris, Yuell Y. and Ivan N. Seibert, ed., The State Education AGency: A Handbook of Standard Terminology and A Guide for Recording and Reporting Information About State Education Agencies. U. S. Government Printing Office, Washington, D.C.: 1971, p. 87.

Holemon, Richard, et al. Concerted Services in New Mexico: An Evaluation of Developmental Change. Report No. 5. Raleigh: Center for Occupational Education, North Carolina State University, 1969.

Hull, W. L., et al. A Conceptual Framework for the Diffusion of Innovations in Vocational and Technical Education. Columbus: Center for Vocational and Technical Education, Ohio State University, March 1973.

Hull, William L. and Gregory Benson, Jr. Installing a Coordinated Information Network in a State Education Agency: A Case Study of the Decision Process in New York. Final Report. Albany: New York State Education Department, February, 1972.

Hull, W. L., et al. Opinion Leaders in the Organizational Structure of Two State Divisions of Vocational and Technical Education. Columbus: Center for Vocational and Technical Education, Ohio State University, March, 1973.

Illinois State Board of Vocational Education and Rehabilitation. Composite Evaluation Report for Occupational Education in the State of Illinois, FY1972. Springfield, Illinois, 1972, 50 p.

Inman, William. Size and School District Organization. ERIC ED 074 575., 1974.

Inventory of Vocational Education Statistics Available in Federal Agencies. Washington, D.C. 1973.

Jones, Charles I. Education and Manpower. Report No. 14. Raleigh: Center for Occupational Education, North Carolina State University, 1972.

Kaufman, Jacob J. A Cost Effectiveness Study of Vocational Education. Institute for Research on Human Resources, Penn State University, 1969.

Keller, Franklin J. The Comprehensive High School. New York: Harper and Brothers, 1955.

Kirst, M. W. The politics of Education at the Local, State and Federal Levels, McCutchan Publishing Corp., Berkeley, Calif., 1970.

Koble, Daniel E., Jr., James C. Bumstead, Robert U. Coker, David C. Gilmore, Harriett L. Stephens. Most Significant Tasks Performed in State Vocational Education Agencies. Columbus: Center for Vocational and Technical Education, Ohio State University, November 16, 1973.

Koble, Daniel E., Jr. Methodology Used in the Identification of Most Significant Tasks Performed by State Vocational Education Agency Personnel. Columbus: Center for Vocational and Technical Education, Ohio State University, November 12, 1973.

Koble, Daniel E., Jr., and Robert U. Coker. Demographic Characteristics of State Level Vocational Education Agencies. Columbus: Center for Vocational and Technical Education, Ohio State University, August 28, 1973.

Koble, Daniel E., Jr., Doublas Pine, Robert U. Coker, and Harriett Stephens. Changing Roles and Functions of Leadership Personnel in State Vocational Education Agencies (Phases I and II). Columbus: Center for Vocational and Technical Education, Ohio State University, February 15, 1973.

Koeninger, Jimmy G. and Darrell L. Ward. Evaluation Report--An Interaction Simulation: Coordinated Local-State Vocational Education Planning. Final Report. Columbus: Center for Vocational and Technical Education, Ohio State University, May, 1972.

Korim, Andrew and others. A Study of the State Grants Mechanism. Final Report. Washington, D.C.: National Planning Association, Center for Priority Analysis, October, 1972.

Law, Gordon F. The Impact of Vocational Education and Manpower Training on the Labor Market. Project Baseline Supplemental Report, Rutgers University, August 1, 1974.

Lawrence, John E.S. and J. K. Dane, Editors. State Vocational Education Planning, An Assessment of Issues and Problems. Raleigh: Center for Occupational Education, North Carolina State University, 1974.

Layton, Donald. "Historical Development and Current Status of State Departments of Education." in Roald F. Campbell, G. Stranfe and D. F. Layton (eds), Strengthening State Departments of Education, Chicago, Illinois: Midwest Administration Center, the University of Chicago. 1967, p. 6.

Lee, Arthur M. *A Data Base for Vocational Education and Manpower Training*. Project Baseline Supplementary Report. Flagstaff: Northern Arizona University, October, 1974.

Lee, Arthur M. *Learning a Living Across the Nation Volumes I-III, Project Baseline National Report*. Flagstaff: Northern Arizona University, November, 1974.

Lindman, Erick L. *Financial Support for Vocational Education in the Public Schools*. Final Report. Los Angeles: Graduate School of Education, California University, September, 1972.

Lindman, Erick L. *Financial Support for Vocational Education in the Public Schools*. Final Report. Bureau of Research, Washington, D.C., August, 1970, 213 p.

Magisos, J. H. *Interpretation of Target Audience Needs in the Design of Information Dissermination Systems for Vocational-Technical Education*. Columbus: Center for Vocational and Technical Education, Ohio State University, 1971.

Magisos, J. H. and Paul E. Schroeder. *Local Administration of Vocational Education: Information Sources*. Columbus: Center for Vocational and Technical Education, Ohio State University, October, 1974.

Magisos, J. H. and Paul Schroeder. *State Administration of Vocational Education: Information Sources*. Columbus: Center for Vocational Education, Ohio State University, October, 1974.

Management and Information System for Occupational Education. An Overview. Management and Information System for Occupational Education, Winchester, Mass, 1972.

Marland, Sydney P. Jr., "Address by the Commissioner of Education to the National Association of Secondary School Principles," Houston, Texas, January 23, 1971.

Marland, Sydney P. Jr., *Career Education: A Handbook for Implementation*. U.S. Department of Health, Education and Welfare: Olympus Research Corp., February 1972.

McCracken, J. David and Wilma B. Gillespie. *Information Needs of Local Administrators of Vocational Education*. Final Report. Columbus: Center for Vocational Education, Ohio State University, March, 1973.

McCracken, J. David. *Information Needs of State Directors of Vocational Education*. Columbus: Center for Vocational Education, Ohio State University, March, 1973.

McCracken, J. David and Robert E. Harris. *Management Systems: Answers to Questions on Vocational and Technical Education*. Columbus: Center for Vocational and Technical Education, Ohio State University, 1972.

Methods and Strategies for State Plan Development in Accordance with the Provisions of the Vocational Education Amendments of 1968. Summary paper. Covington: Bureau of Vocational Education, State Department of Education, March, 1969.

Miller, Melvin D. Leadership Personnel for Vocational and Technical Education, Review and Synthesis of Research on Preparation of. Columbus: Center for Vocational and Technical Education, Ohio State University, July, 1972.

Miller, Robert. Impact of Vocational Education Research at the Federal and State Levels. Project Baseline Supplemental Report. Flagstaff: Northern Arizona University, October 25, 1974.

Morgan, Robert L., et al., editors. Management Information Systems for Vocational Education: A National Overview. Technical Report #1, Raleigh: Center for Occupational Education, North Carolina State University, 1974.

Moss, Jerome, Jr. The Evaluation of Occupational Education Programs. Technical Report. Minneapolis: Research Coordination Unit in Occupational Education, University of Minnesota, September, 1968.

New Dimensions for Careers. Proceedings of the 10th Annual National Clinic on Technical Education, sponsored by the American Technical Education Association and the U.S. Office of Education in cooperation with Milwaukee Area Technical College, March 28-30, 1973.

Noneconomic Analysis Considerations for Management and Information System for Occupational Education. Winchester, Mass., June 15, 1972.

Program Self-Review Procedures. Ohio Program Review for Improvement, Development, and Expansion in Vocational Education. Columbus: Ohio State Department of Education, 1970.

Pucinski, Roman. Everything You Always Wanted to Know About the National Legislature but... Career and Vocational Education Report, No. 10, Raleigh: Center for Occupational Education, North Carolina State University, 1973.

Rankings of the States, 1973 (1973-R1). Washington, D.C.: National Education Association, 1973.

Resource Book for State Advisory Councils on Vocational Education. Washington, D.C.: National Advisory Council on Vocational Education, March, 1973.

Rice, Dick C. The Emerging Role of State Education Departments with Specific Implications for Divisions of Vocational Technical Education. Columbus: Center for Vocational and Technical Education, Ohio State University, 1967.

Rice, Dick C. Role Perception in the Supervision of State Vocational Education in Ohio in Relation to Change. Ph.D. Dissertation: Ohio State University, 1966, 174 p.

Rice, Dick C. Professional Personnel in State Divisions of Vocational Education: Policies, Practices, Requirements. Columbus: Center for Vocational and Technical Education, Ohio State University, November, 1968.

Ripley, Robert M. (ed.) Studies in Transactional Evaluation. McCutchan Publishing Corp., Berkeley, Calif., 1973.

Shoemaker, Byrl. Vocational-Technical Education and School District Organization. Lincoln: Great Plains School District Organization Project, November 28, 1967.

Singletary, Ernest E. A Review of the Vocational Education Amendments of 1968 as Related to the Handicapped. April, 1973.

Smith, B. and J. Moss, Jr. Developing a State System of Managed REsearch and Development Activities in Vocational Education. Columbus: Center for Vocational and Technical Education, Ohio State University, February, 1972.

Slanet, Joseph S. and Melvin R. Levin. Continuing Education in Massachusetts: State Programs for the Seventies. Mass. Advisory Council on Vocational Education: Boston, 1970, 35 p.

Somers, Gerald G. The Effectiveness of Vocational and Technical Programs. Final Report, University of Wisconsin, 1971.

Somers, Gerald G. and J. Kenneth Little. Vocational Education Today and Tomorrow. Madison: Center for Studies in Vocational and Technical Education, University of Wisconsin, 1971.

Sorenson, Warren. A Proposal System for Predicting Costs of Vocational Programs in California Community Colleges. Final Report. California Research Coordinating Unit: Scaramento, June, 1972, p. 104.

Starr, Harold and Richard A. Dieffenderfer. A System for Statewide Evaluation of Vocational Education. Final Report. Columbus: Center for Vocational and Technical Education, Ohio State University, May 1972.

Starr, Harold, et al. A System for State Evaluation of Vocational Education. Columbus: Center for Vocational and Technical Education, Ohio State University, May, 1970.

Steele, Marilyn. Women in Vocational Education. Project Baseline Supplementary Report. Charles Stewart Mott Foundation, Flint, Michigan, October 30, 1974.

Stevenson, W. W. and W. G. Ward. Conducting Evaluation Within a State: Information for State Leaders. Columbus: Center for Vocational and Technical Education, Ohio State University, 1973.

Stromsdorfer, Ernst W. Cost-Effectiveness Studies of Vocational and Technical Education. Review and Synthesis of. Columbus: Center for Vocational and Technical Education, Ohio State University, August, 1972.

Swanson, J. Chester. A Nationwide Study of the Administration of Vocational-Technical Education at the State Level. Volumes I-III, 1966-67.

Swanson, J. Chester. A Nationwide Study of the Administration of Vocational-Technical Education at the State Level, Final Report. Berkeley: University of California, August, 1967. 316 p.

Swanson, J. Chester. Leadership Role, Functions, Procedures and Administration of Vocational-Technical Education Agencies at the State Level, Vol. I. Berkeley: University of California, October, 1968.

Swanson, Gordon I. The Preparation of Teachers for Vocational Education. Project Baseline Supplementary Report. Minneapolis: University of Minnesota, September, 1974.

System for State Evaluation of Vocational Education. Final Report. Research Series No. 58, Columbus: Center for Vocational and Technical Education, Ohio State University, May, 1970.

Training American's Labor Force: Potential, Progress and Problems of Vocational Education. Report to the Congress. Comptroller General of the United States, Washington, D.C., 1972.

Tuxhorn, Scott Edward. The Educational Unit for Administration, Organiza-and Supervision of Area V-T Schools in Oklahoma. Ann Arbor, Michigan: University Microfilms, 1967. 214 p.

Urban, Stanley J. and Thomas, Tsuji. Special Needs Students in Vocational Education: Selected Readings. MSS Information Corp. 655 Madison Avenue, New York.

U. S. Office of Education. An Identification and Analysis of Effective Secondary-Level Vocational Programs for the Disadvantaged. Final Report. Social, Educational Research and Development, Inc.: Washington, D.C., 1968, 314 p.

U.S. Department of Health, Education and Welfare. Vocational Education: The Bridge Between Man and His Work. Annual Report of the Advisory Council on Vocational Education, 1968.

U.S. Bureau of the Census. County and City Data Book, 1972. Washington: Government Printing Office, 1973.

U.S. Department of Commerce. Consumer Income. Characteristics of the Low-Income Population 1972. R.H. Miller. Washington: Government Printing Office, December 1973.

__________. Census of Population, Subject Reports, Occupational Characteristics. Washington: Government Printing Office, June 1973.

U.S. Department of Health, Education and Welfare. Adult Education in Public School Systems 1968-69 and 1969-70. Imogene E. Okes. Washington: Government Printing Office, 1974.

__________. Trends in Vocational Education, FY 1973. Washington: Government Printing Office, 1974.

__________. Digest of Educational Statistics. Washington: Government Printing Office, 1973.

__________. Directory of Representative Work Education Programs 1972-73. Steven M. Frankel, Alan J. Cohen, and Mary Ann Milsay, Eds. Washington: Government Printing Office, 1973.

__________. Guidelines for Identifying, Classifying, and Serving the Disadvantaged and Handicapped Under the Vocational Education Amendments of 1968. Evelyn R. Kay, et.al. Washington: Government Printing Office, 1973.

__________. Manpower Report of the President. Washington: Government Printing Office, 1973.

__________. State Departments of Education, State Boards of Education, and Chief State School Officers. Sam P. Harris. Washington: Government Printing Office, 1973.

__________. Summary Data Vocational Education, Fiscal Year 1973. Washington: Government Printing Office, 1973.

__________. Vocational and Technical Education Selected Statistical Tables, Fiscal Year 1973. Washington: Government Printing Office, 1973.

__________. Cooperative Vocational Education Programs. Washington: Government Printing Office, July 1972.

__________. Selected Career Education Programs for the Handicapped. Washington: Government Printing Office, December 1972.

__________. Statistics of Public Elementary and Secondary Day Schools. Washington: Government Printing Office, 1972.

__________. Directory of Post-Secondary Schools with Occupational Programs Public and Private. Evelyn R. Kay. Washington: Government Printing Office, 1971.

__________. Directory of Secondary Schools with Occupational Curriculums Public-Nonpublic 1971. Nicholas A. Osso. Washington: Government Printing Office, 1971.

__________. Semiannual Report on State Research Coordinating Unit Activities for the Period July 1, 1970 - December 31, 1970. Washington: Government Printing Office, June 1971.

__________. The State-Education Agency. Handbook VII. Washington: Government Printing Office, 1971.

__________. Summary Data Vocational Education, Fiscal Year 1970. Washington: Government Printing Office, 1971.

__________. Vocational Education in Major Cities: Analysis of Population Vocational Education Enrollment, Teachers and Expenditures. Washington: Government Printing Office, 1971.

__________. Vocational and Technical Education Annual Report, Fiscal Year 1969. Washington: Government Printing Office, 1971.

__________. Characteristics of Elementary and Secondary Schools. Washington: Government Printing Office, Spring 1970.

__________. Statistics on Education of the Handicapped in Local Public Schools. Washington: Government Printing Office, Spring 1970.

__________. Vocational and Technical Education Annual Report, Fiscal Year 1968. Washington: Government Printing Office, 1970.

__________. Annual Report National Advisory Council on Vocational Education Vocational Education Amendments of 1968. Public law 90-576. Washington: Government Printing Office, July 1969.

__________. Directory of Public Schools Offering Technical Education Programs. Washington: Government Printing Office, 1969.

__________. Participation in Adult Education. Imogene E. Okes. Washington: Government Printing Office, 1969.

__________. Vocational Education: Bridge Between Man and His Work. G. Venn. Washington: Government Printing Office, 1968.

__________. State Education Structure and Organization. Robert F. Will. Washington: Government Printing Office,

U.S. Department of Labor. Area Trends in Employment and Unemployment. Washington: Government Printing Office, July 1974.

__________. Employment and Earnings. Vol. 20, No. 7. Washington: Government Printing Office, January 1974.

__________. Labor Turnover in Manufacturing. Washington: Government Printing Office, August 1974.

__________. Occupational Outlook Handbook, 1974-75 Edition. Washington: Government Printing Office, 1974.

__________. Unemployment Insurance Statistics. Washington: Government Printing Office, September 1974.

__________. Educational Attainment of Workers. Washington: Government Printing Office, 1969-73.

__________. Job Vacancy Data. Washington: Government Printing Office, December 1973.

__________. Career Thresholds, Vol. 1-4. Washington: Government Printing Office, 1970.

U.S. Government Printing Office. Vocational Education: Characteristics of Students and Staff 1972. Nicholas A. Osso, Washington, 1974.

__________. State Vocational Education Statistics, Fiscal Year 1969, Preliminary Report. Washington, 1970.

__________. Handbook Office of Education Including Career Opportunities. Washington, 1963.

Vocational Education: Staff Development Priorities for the 70's. Washington: National Advisory Council on Education Professions Development, 1973.

Vocational Education Planning: Manpower, Priorities, and Dollars. Research and Development Series No. 68. Columbus: Center for Vocational and Technical Education, Ohio State University, 1972.

Vocational-Technical Program Approval Evaluative Criteria. Pennsylvania Department of Education, Bureau of Planning and Evaluation, Division of Field Surveys, 1974.

Wall, James E. The Impace of Vocational Education and Manpower Training on Target Populations: Ethnic Groups, the Disadvantaged, Handi-Unemployed, and Unemployable Adults. Project Baseline Supplemental Report. Mississippi State University, July 1974.

__________. Review and Synthesis of Strategies for Effecting Change in Vocational and Technical Education. Columbus: Center for Vocational and Technical Education, Ohio State University, April 1972.

__________. Technology and Social Change: Some Implications for Vocational Education. December 1972.

U. S. Office of Education. Vocational Education in Major Cities: Analysis of Populations, V.E. Enrollment, Teachers and Expenditures, FY 1971. Washington, D.C., 1971, 22 p.

Washington State Advisory Council on Vocational Education. Second Report of the Washington State Advisory Council on Vocational Education. Olympia, Washington, 1971, 115 p.

What is the Role of Federal Assistance for Vocational Education? Comptroller General of the United States, U. S. Office of Education, 1974.

Whinfield, R. W. A Summary of the Educational Amendments of 1972 as Applied to Vocational Education. Storrs: Department of Higher Technical and Adult Education, University of Connecticut, April, 1973.

Williams, Robert T. National Conference on the Initiation of a Planning, Programming and Budgeting System in a State Division of Occupational Education. Raleigh: Center for Occupational Education, North Carolina State University, 1970.

Winget, Lerue W., Edgar Fuller and Terrell H. Bell. "State Departments of Education Within State Governments," in Fuller and Pearson. Education in the States: Nationwide Development Since 1900. pp. 75, 122-123.

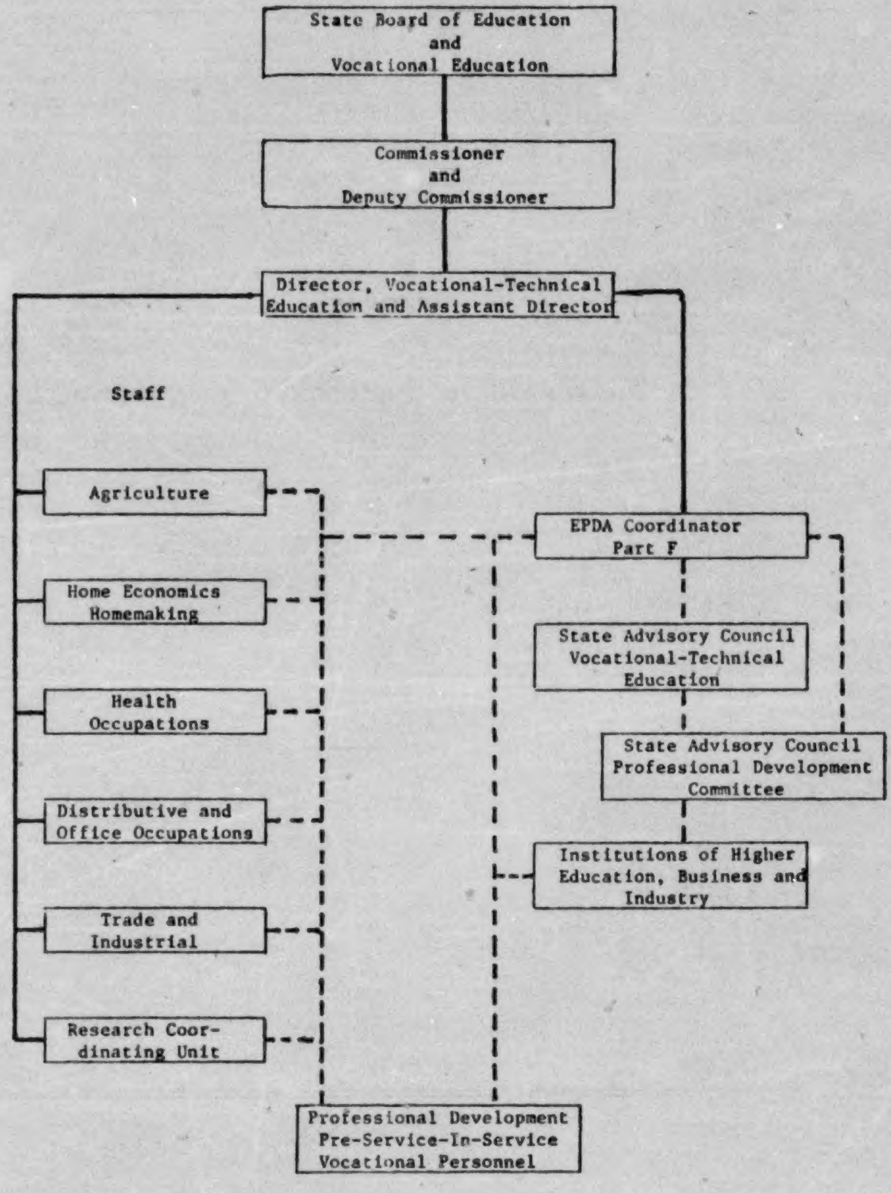
Wisconsin's Vocational and Technical Education Programs for Persons with Special Needs. Madison: University of Wisconsin, 1972.

Worthington, Robert M. Career Education in the U.S. Today: What it is, Where, and the Results so Far. Project Baseline Supplemental Report, Rutgers University, New Brunswick, N.J., June 28, 1974.

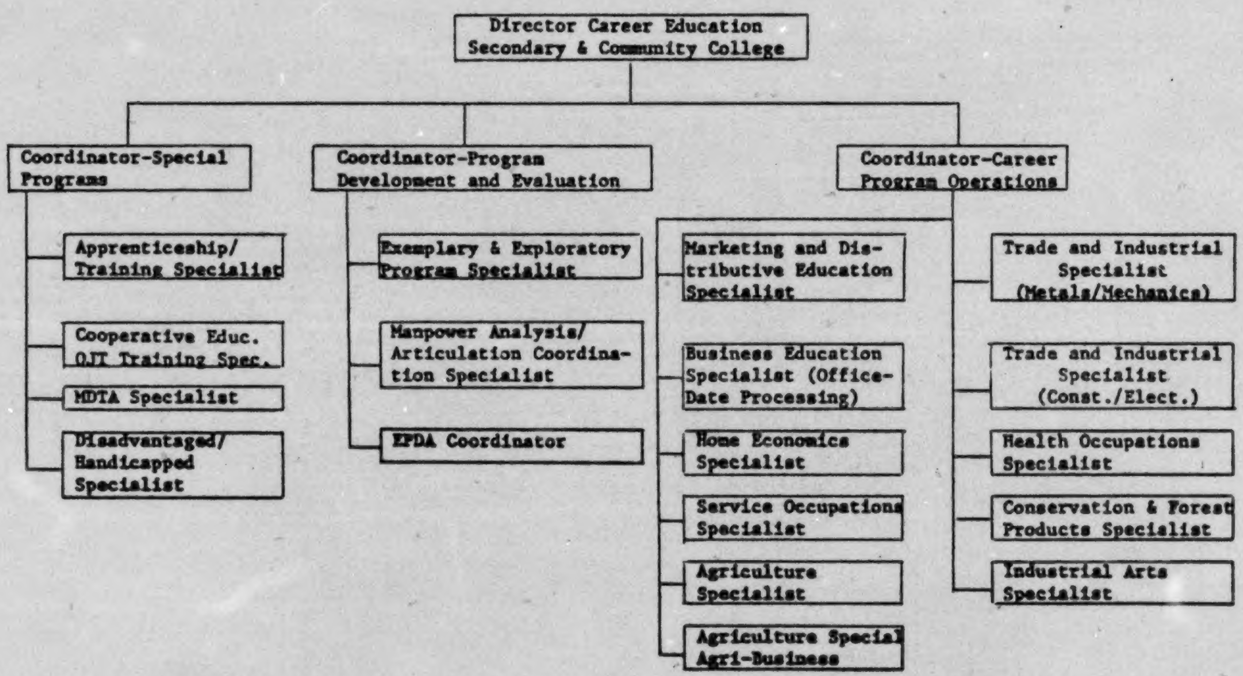
Young, Robert C. Vocational Education Planning: Or Making Do With Imperfect Data. Presentation at the American Vocational Association Convention, Chicago, December 2, 1974.

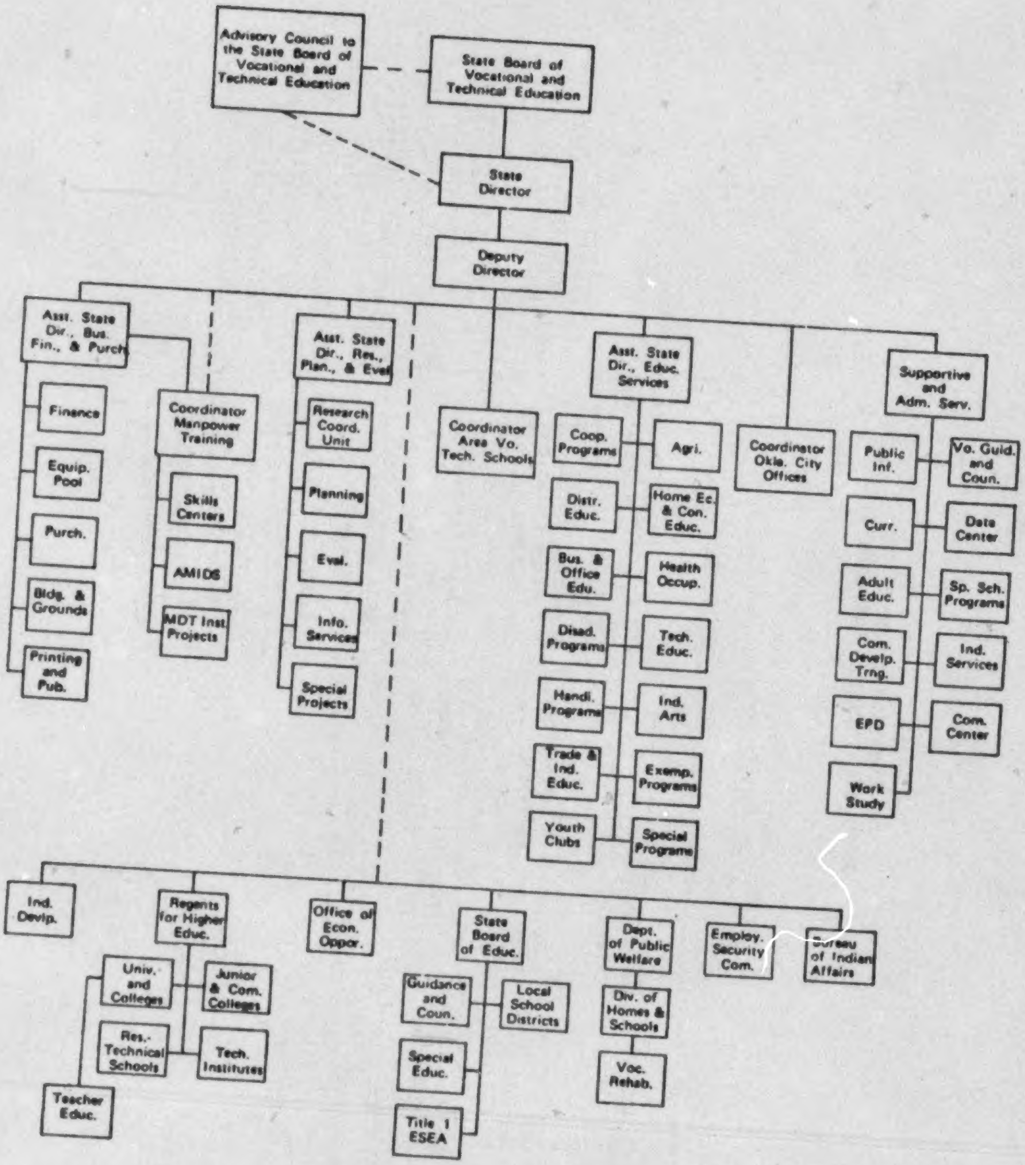
APPENDIX A

Four Generalized Patterns of Organization

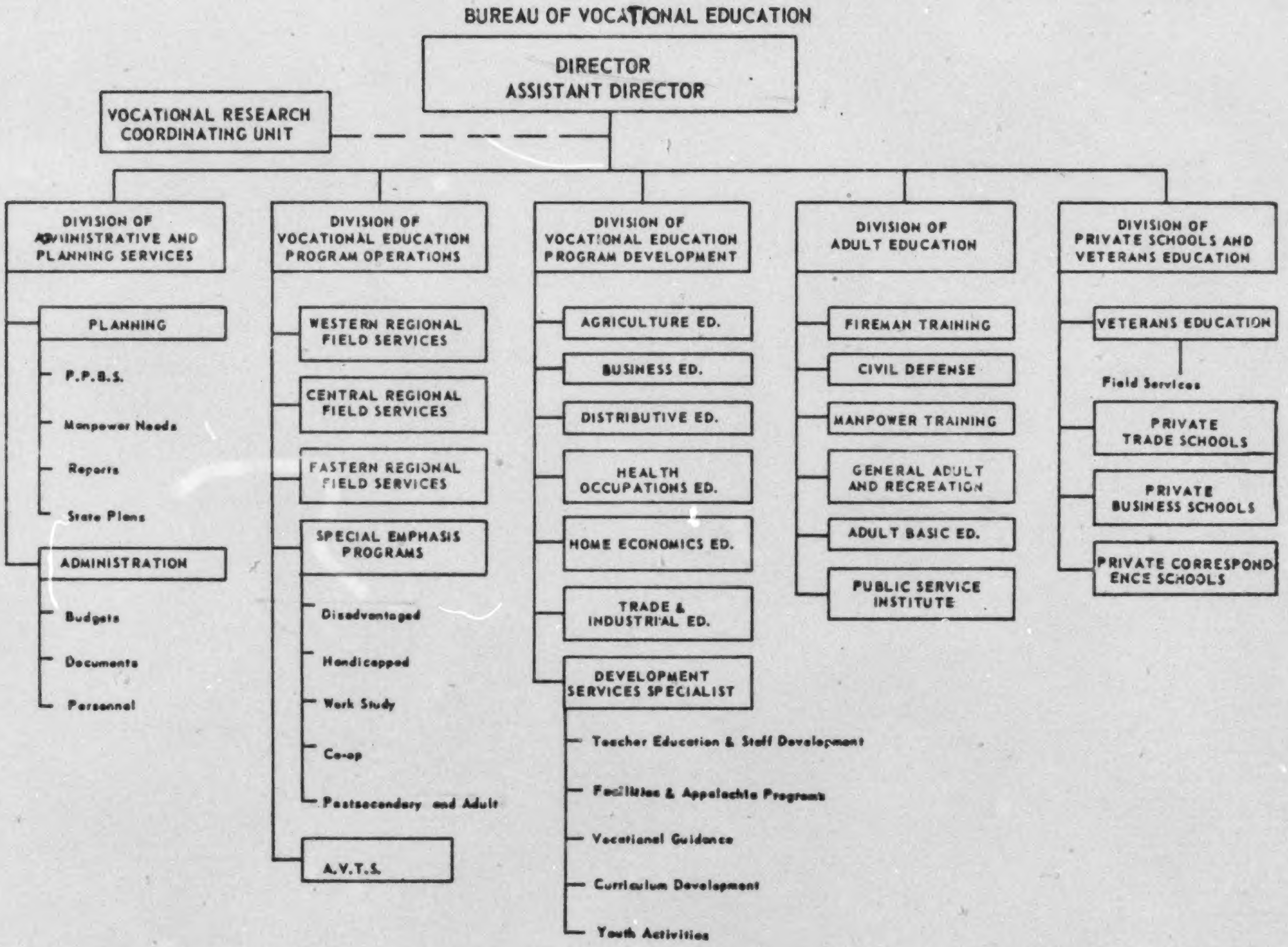

State Board of Education and Vocational Education
Commissioner and Deputy Commissioner
Director, Vocational-Technical Education and Assistant Director
Staff
Agriculture
Home Economics Homemaking
Health Occupations
Distributive and Office Occupations
Trade and Industrial
Research Coordinating Unit
EPDA Coordinator Part F
State Advisory Council Vocational-Technical Education
State Advisory Council Professional Development Committee
Institutions of Higher Education, Business and Industry
Professional Development Pre-Service-In-Service Vocational Personnel

STAFFING PATTERN
VOCATIONAL-TECHNICAL EDUCATION


Director Career Education Secondary & Community College
Coordinator-Special Programs
Apprenticeship/ Training Specialist
Cooperative Educ. OJT Training Spec.
MDTA Specialist
Disadvantaged/ Handicapped Specialist
Coordinator-Program Development and Evaluation
Exemplary & Exploratory Program Specialist
Manpower Analysis/ Articulation Coordination Specialist
EPDA Coordinator
Coordinator-Career Program Operations
Marketing and Distributive Education Specialist
Business Education Specialist (Office-Date Processing)
Home Economics Specialist
Service Occupations Specialist
Agriculture Specialist
Agriculture Special Agri-Business
Trade and Industrial Specialist (Metals/Mechanics)
Trade and Industrial Specialist (Const./Elect.)
Health Occupations Specialist
Conservation & Forest Products Specialist
Industrial Arts Specialist



Organizational Chart
State Department of Vocational and Technical Education
(also showing relationship to cooperating agencies)


BUREAU OF VOCATIONAL EDUCATION
DIRECTOR
ASSISTANT DIRECTOR
VOCATIONAL RESEARCH COORDINATING UNIT
DIVISION OF ADMINISTRATIVE AND PLANNING SERVICES
PLANNING
P.P.B.S.
Manpower Needs
Reports
State Plans
ADMINISTRATION
Budgets
Documents
Personnel
DIVISION OF VOCATIONAL EDUCATION PROGRAM OPERATIONS
WESTERN REGIONAL FIELD SERVICES
CENTRAL REGIONAL FIELD SERVICES
EASTERN REGIONAL FIELD SERVICES
SPECIAL EMPHASIS PROGRAMS
Disadvantaged
Handicapped
Work Study
Co-op
Postsecondary and Adult
A.V.T.S.
DIVISION OF VOCATIONAL EDUCATION PROGRAM DEVELOPMENT
AGRICULTURE ED.
BUSINESS ED.
DISTRIBUTIVE ED.
HEALTH OCCUPATIONS ED.
HOME ECONOMICS ED.
TRADE & INDUSTRIAL ED.
DEVELOPMENT SERVICES SPECIALIST
Teacher Education & Staff Development
Facilities & Appalachia Programs
Vocational Guidance
Curriculum Development
Youth Activities
DIVISION OF ADULT EDUCATION
FIREMAN TRAINING
CIVIL DEFENSE
MANPOWER TRAINING
GENERAL ADULT AND RECREATION
ADULT BASIC ED.
PUBLIC SERVICE INSTITUTE
DIVISION OF PRIVATE SCHOOLS AND VETERANS EDUCATION
VETERANS EDUCATION
Field Services
PRIVATE TRADE SCHOOLS
PRIVATE BUSINESS SCHOOLS
PRIVATE CORRESPONDENCE SCHOOLS

APPENDIX B

U. S. Official Definitions of Types of Institutions

FEDERAL GOVERNMENT DEFINITIONS OF VOCATIONAL EDUCATION FACILITIES

REGULAR HIGH SCHOOL

Three or four-year school providing academic and elective courses without vocational education programs.

COMPREHENSIVE HIGH SCHOOL

School with number of departments (e.g., academic, industrial, business and vocational) offering a diversified program to meet the needs of pupils with varying degrees of interests and abilities.

COMPREHENSIVE HIGH SCHOOL W/ CROSS-ENROLLMENT

Comprehensive high school offering some vocational programs with students enrolling in their school district and attending another district for vocational education (but remaining a member of their own district high school.)

OCCUPATIONAL TRAINING ANNEX

A vocational education service center combined with one of the district schools of a school system.

REGIONAL/AREA VOCATIONAL-TECHNICAL SCHOOL

A series of vocational schools, with programs corresponding to the needs of the student within a district or regional area.

REGIONAL SKILL CENTERS

Vocational education service centers offering vocational programs and enrolling students from a number of district high schools in the 11th and 12th years, or the last two years of a student's school career.

ADULT AND CONTINUING EDUCATION SCHOOLS

Instructional services designed to assist adults and youth who have either completed or interrupted their formal education.

TECHNICAL TRAINING CENTER

Center functioning in cooperation with an area vocational education center, both administered by one authority with one tax base for both.

TECHNICAL INSTITUTES

Technical education centers functioning independently of other city, county educational units contained within their district. (May be assisted financially and supervised by either a State Board of Education or a Board of Higher Education within a state.

COMMUNITY/JUNIOR COLLEGES

Institutions providing transfer programs for baccalaureate degree credit, technical preparation for para-professional occupations and community service programs of an adult education nature.

UNIVERSITY BRANCHES

Local unit of a sponsoring university offering technical education programs, but located in an urban area separate from the main campus.

COLLEGES/UNIVERSITIES

Programs in technical education offered within a specific department, programs being oriented toward acquisition of baccalaureate degree in technical areas.

APPENDIX C

Titles Used by Different States to Describe Institutions

Kinds of Schools (wording taken directly from State Plans)

Agricultural School
Area Center in comprehensive high school
Area vocational center
Area Vo-tech center
Area vo-tech high school
Business-technical institute
Colleges/universities with A.S. degree
Combination 9-12 and Post High-school
Community Colleges with Technical program
Comprehensive high school with vocational department
Contracted programs
Cooperative education
District high school with vocational department
Educational Service Center
Extension Service
High school with occupational annex
Independent Area vocational centers
Indians/prisons, etc.
Industrial Training Sections
Junior Colleges
Mobile Training Units
Regional high school with vocational department
Regional Occupational Center
Regional Vo Tech Schools
Schools with grades 7-12
Secondary schools with vo tech department
Skill Centers
Secondary, evening
Specialized secondary
specialized vo-tech high school
TEC centers
Technical Colleges
Technical Community College
Technical Institute
Technical School
Technical Trade School
Trade School
Union High School
Vocational College
Vocational Department in Area high school
Vo-Tech annex
Vo-Tech Center
Vo-Tech College
Vo-Tech high school
Vo-Tech institute
Vo-tech school
Work study

APPENDIX D

Data by State for Changes in Federal Expenditures per Pupil, Total Expenditure per Pupil, Staff Enrollments, Placement and Completion

TABLE 1

CHANGES IN FEDERAL EXPENDITURES PER PUPIL FOR TOTAL, SECONDARY, POST SECONDARY AND ADULT VOCATIONAL EDUCATION

1970-71 TO 1972-73

State	Total	Secondary	Post Secondary	Adult
1	-3.40	-5.42	37.38	-11.10
2	-20.40	-3.04	-167.63	-11.41
3	-9.17	4.26	-25.87	-8.98
4	-3.00	-3.31	-46.22	1.70
5	6.66	12.89	15.69	-6.51
6	9.78	7.50	11.82	4.19
7	21.05	2.40	47.45	7.16
8	-0.91	.24	-24.91	-13.78
9	-5.37	-9.97	-13.72	-0.19
10	-4.76	-1.26	-186.75	3.30
11	10.06	18.74	-44.61	3.25
12	1.07	3.10	-27.66	-1.51
13	5.08	5.30	-4.28	-6.44
14	-5.22	-12.35	9.92	2.77
15	6.34	10.56	75.06	-4.17
16	6.19	3.65	-10.30	3.33
17	3.20	-5.98	57.81	5.96
18	9.27	21.88	-58.02	-3.64
19	-25.24	-18.86	-52.47	3.40
20	-2.15	.92	-52.36	-0.65
21	-8.36	-29.02	22.87	26.83
22	9.46	10.73	4.57	-0.80
23	1.32	3.62	-64.75	5.87
24	-4.61	9.44	-126.33	-1.18
25	53.67	51.57	155.66	14.43

Table 1 - Con't.

State	Total	Secondary	Post Secondary	Adult
26	-5.50	-27.00	-10.30	-0.71
27	0.41	6.98	-59.61	-0.80
28	-14.57	-14.55	-33.57	-1.16
29	25.05	28.84	-106.88	-15.15
30	-2.16	-3.33	-5.00	0.35
31	-8.25	-13.66	87.15	-6.13
32	-0.85	-6.41	-10.44	7.51
33	-0.95	1.22	-7.20	0.0
34	-14.87	-19.05	31.03	8.23
35	-9.94	-30.65	33.25	5.11
36	4.14	-260.09	197.39	19.38
37	-1.83	1.34	-45.36	2.65
38	10.17	13.72	-27.14	-0.96
39	41.73	28.73	116.78	68.21
40	-6.05	-7.21	-189.93	-5.58
41	-4.42	-0.83	-70.13	3.79
42	7.68	18.96	-67.03	13.05
43	12.61	24.19	-26.42	1.75
44	4.75	-0.46	85.05	-4.10
45	-23.76	-28.98	70.98	0.0
46	-1.66	3.69	-78.17	-0.54
47	-3.40	2.95	38.51	-7.14
48	12.96	20.51	-99.23	-12.03
49	-10.16	-28.23	-13.46	0.70
50	-1.47	4.56	-117.09	-9.09

TABLE 2

CHANGES IN FEDERAL, STATE AND LOCAL PER PUPIL EXPENDITURES FOR TOTAL, SECONDARY, POST SECONDARY AND ADULT LEVELS 1970-71 TO 1972-73

State	Total	Secondary	Post Secondary	Adult
1	-31.42	-14.19	-143.66	-13.63
2	-58.45	-10.94	-273.47	-22.13
3	0.46	40.47	-65.93	-4.48
4	14.98	4.94	128.40	4.49
5	27.27	49.14	54.96	4.70
6	87.35	185.68	-73.77	5.87
7	-0.98	9.39	951.38	4.81
8	0.17	12.89	-1426.68	-18.23
9	18.51	-7.10	73.81	2.98
10	-30.35	-30.73	-419.84	-14.47
11	24.54	52.75	-182.70	6.55
12	9.64	14.63	-62.98	2.23
13	43.26	56.94	-178.18	-87.23
14	7.35	-6.17	143.39	-5.03
15	20.80	22.03	320.10	-7.81
16	49.22	54.96	79.63	4.82
17	-18.07	-27.10	-166.49	18.43
18	74.17	93.67	28.18	12.42
19	-8.96	25.52	246.07	5.16
20	-32.15	-64.65	49.12	5.32
21	-175.29	-213.11	213.84	89.48
22	51.87	68.53	51.87	-19.12
23	117.32	63.88	817.34	13.47
24	16.05	38.66	-85.17	-0.06
25	223.18	258.56	724.04	32.37

Table 2 - Con't.

State	Total	Secondary	Post Secondary	Adult
26	14.75	-16.46	-246.31	23.16
27	8.32	3.67	-87.57	6.48
28	-75.04	-79.95	-132.18	-31.84
29	92.80	110.01	-71.94	-27.88
30	52.29	57.63	166.37	9.05
31	61.81	-19.18	964.27	59.94
32	38.82	83.80	132.20	-62.52
33	9.63	-12.71	287.03	-21.82
34	-37.31	-23.45	-144.30	26.61
35	-189.13	-237.47	88.65	-227.13
36	-0.28	-37.52	-98.97	21.84
37	206.60	74.50	651.42	29.52
38	24.65	-31.62	64.42	-2.01
39	54.57	26.14	33.58	82.68
40	-15.02	-19.45	-369.23	-24.82
41	19.85	23.45	-1.99	7.87
42	58.91	69.72	2.99	53.06
43	36.88	73.09	-11.80	3.04
44	52.20	9.27	660.02	-0.98
45	-327.55	-413.49	682.20	-18.30
46	5.96	21.61	-139.61	-1.08
47	72.26	180.37	336.66	-34.37
48	85.64	113.61	-226.74	-8.31
49	-54.78	-40.85	-222.76	21.08
50	-27.86	-23.97	-339.50	-147.41

TABLE 3

RATIO OF STATE/LOCAL INSTRUCTIONAL COSTS TO FEDERAL EXPENDITURES, HANDICAPPED AND DISADVANTAGED INSTRUCTIONAL EXPENDITURES TO TOTAL EXPENDITURES, 1970-71 TO 1972-73

State	Ratio-State/Local Instructional Costs to Federal Expenditures	Ratio-Handicapped Expenses to Total Instructional Expenditures	Ratio-Disadvantaged Expenses to Total Instructional Expenditures
1	-0.33	-3.01	-0.80
2	1.30	-1.24	-25.50
3	0.84	-1.81	-3.50
4	0.53	-3.44	-4.50
5	-0.91	-0.25	-3.40
6	0.68	-3.72	-3.80
7	-0.28	-3.75	10.10
8	0.22	8.15	3.00
9	2.50	-1.21	2.10
10	-0.29	0.91	-4.70
11	-0.39	-0.75	1.40
12	0.10	-0.87	0.50
13	-0.61	-0.86	6.50
14	0.32	-8.78	6.00
15	-0.41	-0.06	5.10
16	0.50	-1.88	-2.50
17	-0.68	-0.85	3.30
18	0.82	-3.50	1.60
19	1.29	-1.11	1.60
20	-0.35	-1.02	1.30
21	-0.99	-0.77	1.70
22	0.34	-1.37	-3.00
23	3.78	-0.56	0.20
24	0.67	-0.16	-2.70
25	0.11	0.63	1.20

Table 3 - Con't.

State	Ratio-State/Local Instructional Costs to Federal Expenditures	Ratio-Handicapped Expenses to Total Instructional Expenditures	Ratio-Disadvantaged Expenses to Total Instructional Expenditures
26	0.51	-0.89	-1.40
27	0.15	0.90	3.60
28	-0.47	-6.73	1.90
29	0.03	-5.09	6.30
30	1.73	-2.75	1.60
31	1.91	-5.17	-14.60
32	1.33	-2.33	-1.30
33	0.53	-0.69	-0.30
34	0.17	-0.16	-0.90
35	-2.53	1.46	9.80
36	-0.34	7.00	0.10
37	6.01	-2.91	-4.20
38	-0.81	1.67	2.00
39	-1.43	-0.71	-0.10
40	0.04		
41	0.47	-3.39	-12.10
42	0.44	0.86	0.20
43	-0.57	-0.72	1.60
44	0.76	-1.53	3.80
45	-1.75	1.24	6.60
46	0.40	0.84	-9.10
47	3.32	-1.44	-1.00
48	0.60	-1.36	-4.20
49	0.66	-0.02	1.00
50		-2.79	3.20

TABLE 4

CHANGE IN STAFF/1000 POPULATION
1970-71 TO 1972-73

State	Change in Staff	State	Change in Staff
1	-0.02	26	0.42
2	-0.73	27	-0.02
3	-0.48	28	0.10
4	-0.44	29	0.29
5	-0.07	30	0.00
6	-0.07	31	-0.08
7	-0.08	32	-0.04
8	-0.92	33	-0.57
9	0.34	34	0.12
10	-0.07	35	0.12
11	-0.91	36	0.49
12	-0.02	37	-0.07
13	-0.01	38	0.06
14	-0.03	39	-0.01
15	0.21	40	0.30
16	-0.15	41	0.11
17	0.21	42	0.04
18	-0.12	43	-0.05
19	0.12	44	0.41
20	-0.01	45	0.31
21	0.27	46	0.06
22	-0.22	47	-0.37
23	0.25	48	-0.06
24	0.19	49	-0.35
25	-0.04	50	0.00

TABLE 5

DIFFERENCES IN ENROLLMENT PER 1000 POPULATION
1970-71 TO 1972-73

State	Total	Secondary	Post Secondary	Adult	Dis-advantaged	Handicapped
1	1.34	50.00	13.80	7.70	-63.90	-11.50
2	1.54	191.00	23.50	44.80	165.60	-35.30
3	-2.07	71.30	210.60	3.80	-99.20	6.30
4	1.89	58.70	2.30	-0.80	-83.30	-8.80
5	0.36	-6.30	-20.30	8.20	-25.70	-27.70
6	4.40	-23.60	18.70	2.10	-17.60	12.60
7	6.03	190.90	.30	-3.00	130.10	-0.20
8	8.18	208.20	13.80	4.80	-38.50	94.60
9	1.20	279.90	83.20	16.30	-17.20	3.30
10	2.56	118.30	28.20	3.60	-67.70	-42.00
11	6.03	-120.00	56.70	8.00	139.70	-3.40
12	-1.32	36.30	17.80	8.70	11.60	1.60
13	61.11	-154.70	18.30	1.10	21.60	3.90
14	-0.25	38.40	7.30	2.40	-1.10	4.00
15	-0.58	12.40	14.20	22.60	152.50	5.50
16	1.54	23.70	3.10	-4.70	-26.20	-9.90
17	-0.74	74.10	13.60	9.30	78.40	5.50
18	-0.67	10.80	9.90	2.70	88.70	1.00
19	-0.41	100.00	8.10	15.90	41.00	2.40
20	4.52	170.00	19.90	1.20	-141.80	-25.30
21	-0.24	70.60	13.80	5.00	17.60	2.60
22	-0.52	24.90	21.20	-1.10	-37.80	4.50
23	16.55	-49.30	14.00	15.00	-11.60	-13.10
24	1.44	53.50	7.00	6.10	-6.50	-1.00
25	1.15	-74.60	-8.50	-5.40	43.10	24.20

Table 5 - Con't.

State	Total	Secondary	Post Secondary	Adult	Disadvantaged	Handicapped
26	-0.91	95.80	41.30	-10.10	-55.60	-24.40
27	-0.69	70.70	24.40	9.00	57.80	14.30
28	-0.52	321.30	58.80	9.60	-73.30	-3.40
29	26.98	-143.60	5.30	11.50	40.50	9.30
30	4.35	45.00	1.50	1.60	-1.20	-4.60
31	1.94	142.90	-11.90	-1.90	-249.20	-4.90
32	8.63	36.40	3.70	6.40	44.90	2.70
33	6.52	104.90	25.80	28.20	-58.50	-11.70
34	-0.66	-216.70	38.90	10.90	53.50	4.90
35	2.33	151.60	10.00	1.70	-51.60	-0.50
36	-0.36	31.10	13.40	-2.70	-71.90	52.80
37	3.98	27.20	63.20	2.50	-49.00	6.60
38	-0.21	26.70	12.40	0.50	24.40	24.10
39	-0.24	89.70	-1.20	-2.30	13.00	-0.90
40	2.78	85.80	19.20	-1.20	-142.90	-13.20
41	5.45	41.80	6.70	2.40	-89.10	-28.00
42	-0.65	6.70	13.40	6.40	87.10	23.30
43	1.62	19.90	21.40	11.90	-77.20	11.00
44	9.66	-84.00	-25.60	23.20	-77.00	-3.10
45	1.31	87.50	1.00	7.80	-161.30	6.00
46	11.66	94.00	14.00	10.60	-68.80	19.10
47	0.81	9.70	-73.30	33.80	36.90	9.40
48	-0.41	46.60	3.90	-5.20	-36.10	-0.30
49	0.92	168.00	68.00	9.00	-8.00	-5.00
50	6.00	7.00	3.00	3.00	8.40	-2.00

TABLE 6

CHANGE IN PLACEMENT/1000 COMPLETIONS
1970-71 TO 1972-73

State	Total	Secondary	Post Secondary	Adult
1	32	20	-150	290
2	-119	-30	-110	-170
3	99	50	100	270
4	-336	-30	370	300
5	45	-10		
6	15			
7	61	60	80	300
8	257	210	40	250
9	351	-30	10	10
10	-819	-220	-190	
11				
12	-3562	120	220	-60
13	-38	-40		-30
14	66	100	-50	-110
15	88	150	-50	
16	72	60	20	430
17	-48		-70	-30
18	-8	-100	-20	240
19	33		210	240
20	-152	-100	180	
21	88	160	-120	-70
22	1	150	-80	330
23	135	60	300	
24	-98	-120	-90	-260
25	-10	-20	-310	-170

Table 6 - Con't.

State	Total	Secondary	Post Secondary	Adult
26	19	-80	-140	50
27	-17	-80	-80	-10
28	-12		-600	-30
29	50	-30	200	
30	33	-70	50	80
31	-312	-270	-180	20
32				
33	-194	-400		
34	-70	-180	-120	-90
35	-7	10	-300	-100
36	152	70	-100	40
37	97	230	20	
38	56	110	-40	-130
39	195	210	110	20
40	-7	-80	350	
41	-31	-70	100	-140
42	-135	-190	-240	10
43	-3	-80		80
44	476	360	-140	
45	40	20	765	80
46	-254	-380	-60	-120
47	51	130	-280	
48	147	230	80	
49	117	140	120	
50	28	150	20	

TABLE 7

CHANGE IN COMPLETION PER 1000 ENROLLMENT
1970-71 TO 1972-73

State	Completions	Secondary, Post Second. Completions	State	Completions	Secondary, Post Second. Completions
1	9.39	30.33	26	-37.34	24.98
2	-300.94	-79.76	27	16.86	5.61
3	18.17	21.25	28	187.22	211.66
4	-0.48	3.08	29	43.78	58.47
5	-0.46	-0.46	30	-42.61	-4.78
6	162.12	162.00	31	-48.77	-57.51
7	-4.66	-21.25	32		
8	-12.76	-22.55	33	100.81	100.81
9	103.20	14.33	34	-26.74	-36.01
10	125.24	125	35	-14.33	-48.70
11			36	-12.56	-26.20
12	4.14	15.36	37	24.76	24.75
13	50.14	48.78	38	3.56	-15.21
14	-8.73	-23.35	39	46.91	26.63
15	3.62	3.61	40	-12.76	-27.59
16	51.51	45.88	41	-36.04	32.74
17	71.01	82.36	42	71.02	109.86
18	-2.41	-6.32	43	55.81	71.08
19	-20.30	-2.64	44	23.37	23.64
20	19.18	19.17	45	-18.62	17.24
21	25.42	23.27	46	-30.55	-50.07
22	-50.01	-98.35	47	49.75	124.86
23	22.17	78.96	48	-68.64	-145.77
24	21.89	30.90	49	-32.01	-32.01
25	-34.30	-38.22	50	41.57	41.69

APPENDIX E

The Institutional Types Used by Each State

	Regular High School	Comprehensive High School	Comprehensive High School Cross Enroll.	Occupational Training Annex	Regional/area Voc. School	Regional Skill Center	Adult & Cont. Educ. Schools	Technical Training Centers	Technical Institutes	Community/ Junior College	University Branches	Colleges/ Universities	Other	
	1	2	3	4	5	6	7	8	9	10	11	12	13	
Alabama	L	L				L			S	S	L	L	L	
Alaska	L			L			S			L				
Arizona														
Arkansas	L	L	L	L	S*	S	L/S		S	S	S	S	R	
Calif.														
Colorado		L			L					L/S				
Conn.		L/R			S**				S	S				
Delaware		L/S			L/S		L/S			S		L		
Florida	L				L					L		S		
Georgia	L/S	L/S	L/S		R/L/S	L/S			S	S			L	
Hawaii		S								S	S	S	S	
Idaho	L	L			S					R		S		
Illinois														
Indiana														
Iowa														
Kansas		S			S**				S	S		S/L		
Kentucky	L	L			S**		S	S	S	S		S		
Louisiana	L/S			S/O	S/O**	L/S	L/S			L/S	S	S		
Maine	S/L	S/L			R/S		S/L		S					
Maryland		L	L		L	L				L			S	
Mass.	S	S			S**					S			S	
Michigan	L	L	L	L		R	R			L	S	S		
Minnesota	L		R	L	L	L	L	L		S	S	S		
Miss.														
Missouri	L	L			L	L	L			L	L	L		
Montana														
Nebraska		L								R				
Nevada	L	L								O	O			
New Hamp.														
New Jersey			L		L				L	L				
New Mex.		L	L		L	L	L		S/L					
New York														
N.Carolina		L/S					L/S		L/S	L/S	L/S	L/S		
N.Dakota	L	L	L		R					L/S	S	S		
Ohio		L			L			L		L	L			
Oklahoma		L/S			L/S		L/S			S/O	S/O	S/O		
Oregon														
Penna.														
Rhode Isl.		L			L/S				S	S				
S.Carolina			L		L	L			S		O	O		
S.Dakota														
Tennessee														
Texas	L	L			L				S	L		S		
Utah	L				R	S			S	O		O		
Vermont	L				L				S	S		S		
Virginia		L	L		L	S	L			S				
Washington		L/S			L/S	S/L				S/L		O		
W.Virginia	L	L	L	L	R		L			S	S	S	L/S	
Wisconsin	L	L	L	L			R	R	R	R	S	S		
Wyoming														

CODING: L=Local S=State R=Regional O=Other L/S, L/R, S/O = Combinations
Cols. 1-5=Secondary 6-7=Adult and Out-of-School Youth 8-12=Post-Secondary
* Post Secondary ** Secondary

APPENDIX F

Data Collection Instrument and Instructions

General Instructions

1. The attached materials are for describing the nature and scope of vocational education delivery systems. The information requested is (except for column 1, 2 and 3) in regard to institutions which offer programs included under the 1968 Vocational Amendments or approved by your state (this includes such programs as career education.)

2. The materials have been designed to make it as easy as possible to report information about a states delivery system. It is virtually impossible to develop a check sheet to accommodate the variety of systems operating in the country. Therefore we are asking that:

(a) on Form 1, state your own definition of institutions and on Form 2, provide us with data based on your own definition (do not include experimental, or one year or one institution programs)

(b) on Form 3, give brief definition of full-time equivalency by line. If you cannot give an estimate in full-time equivalents, please indicate on Form 3.

(c) give brief description of various items which cannot be accommodated on the form by brief statements on the back of the form indicating appropriate line and column.

3. Since the data collection varies from state to state or is designed to respond to Federal reports, most of the data requested is probably not accessible from present data sets. We are therefore not asking for definitive information, but rather "the best estimates." This is best done by a couple of people who have a good overall perception of the entire state system. Data should be reported as follows:

(a) where data is precise we would appreciate your circling it,

(b) if it is a "best estimate," (you feel comfortable with the figure) merely report the data,

(c) where information is imprecise or a guess, underline and

(d) if it cannot be estimated or even guessed, write in UN (unknown).

Form 1 - Instructional Institution Definitions - State of ______________________

The following are Department of Health, Education and Welfare designations and descriptions for delivery systems in vocational education. States do not necessarily conform in usage of these terms. Using these definitions merely as reference points, please write a short description of equivalent institutions in your state. When giving data on Form 2 (questionnaire) give data in terms of your definition, not the HEW definition. Be sure to enter the name(s) by which such schools are known in your state.

HEW Designations/Definitions	Designations/Definitions
1. Regular High School 3 or 4-year school providing academic and elective courses, without vocational education programs.	
2. Comprehensive High School School with number of departments (e.g., academic, industrial, business and vocational) offering a diversified program to meet the needs of pupils with varying degrees of interests and abilities.	
3. Comprehensive High School w/cross-enrollment - Comprehensive high school offering some vocational programs with students enrolling in their school district and attending another district for vocational education (but remaining a member of their own district high school.)	
4. Occupational Training Annex A vocational education service center combined with one of the district schools of a school system.	
5. Regional/area Vocational-Technical School - A series of vocational schools, with programs corresponding to the needs of the student within a district or regional area.	
6. Regional Skill Centers Vocational education service centers offering vocational programs and enrolling students from a number of district high schools in the 11th and 12th years, or the last two years of a student's school career.	
7. Adult and Continuing Education Schools Instructional services designed to assist adults and youths who have either completed or interrupted their formal education.	

State of ______________________________

HEW Designations/Definitions	Designations/Definitions
8. Technical Training Center Center functioning in cooperation with an area vocational education center, both administered by one authority with one tax base for both.	
9. Technical Institutes Technical education centers functioning independently of other city, county educational units contained within their district. (May be assisted financially and supervised by either a State Board of Education or a Board of Higher Education within a state.	
10. Community/Junior College Institutions providing transfer programs for baccalaureate degree credit, technical preparation for para-professional occupations and community service programs of an adult education nature.	
11. University Branches Local unit of a sponsoring university offering technical education programs, but located in an urban area separate from the main campus.	
12. Colleges/Universities Programs in technical education offered within a specific department, programs being oriented toward acquisition of baccalaureate degree in technical areas.	

13. Other Institutions

14.

15.

16.

Instructions for completing Form 2 - Delivery System Questionnaire:

Col. 1	Type of school: listed by HEW designation. Please give us the information requested for each type of school under each of the sub-headings shown in columns 2 through 13. Use figures that conform to your definitions.
Col. 2	Total Number of Schools: Please enter total number of schools described in Column 1.
Col. 3	Please enter best estimate of average total full-time equivalent enrollment per school (all students.)
Col. 4	Please enter number of schools in each category which offer vocational education.
Col. 5	Enter estimated average full-time total equivalent vocational enrollment per school. (Vocational Students Only.)
Col. 6	Enter best estimate of % of vocational enrollment in all schools by level (H.S., P.H.S., Adult)
Col. 7	Enter best estimate of % of disadvantaged and handicapped enrolled in regular vocational programs.
Col. 8	Enter % of disadvantaged and handicapped enrolled in special needs vocational programs.
Col. 9	Financing vocational education: please enter best estimate of % contributed by Federal, state, local and other sources.
Col. 10	Controlling Boards, level: for each category of schools named in column 1, please check appropriate box to tell us whether control is by a local, regional, state, or "other" board. If other, please explain on reverse side of the questionnaire, being sure to note columns and lines to which your answer applies.
Col. 11	Controlling boards, selection: Please enter "P" if board is selected by popular vote, "C," "A," or "O," if board is selected by other than popular vote, please explain on reverse side of questionnaire, using Column numbers and lines which correspond to your answer.
Col. 12	If institutions described in Column 1 have cooperative arrangements for vocational students, indicate S = School or Schools, I = Non-Educational Institution (hospital, industry, etc.), A = Agencies, C = Cooperative Program Arrangements. Please explain on back of page using corresponding column number and line number.
Col. 13	If institutions described in Column 1 are area vocational schools, please enter best estimate of number so designated in each category.
Line 13-18	If your state has institutions which deliver state-approved vocational education, but which are not listed on our form, please add them and complete the form, using terms by which they are generally known in your state.

FORM 2 - Delivery System Questionnaire - State of ____________________

Col. 1	Col. 2	Col. 3	Col. 4	Col. 5	Col. 6			Col. 7		Col. 8	Col. 9				Col. 10	Col. 11	Col. 12	Col. 13
					Estimated % of Vocational Enrollment										Controlling Bds. Indicate all that apply		Coop. Arrgmts. by Progm.	
Type of Institution Use your own definition (from Form 1)	Total Number of Schools in ea. Categ.	Est. Avg. Total Enroll. per School	Number of Schools Offng. Voc.Ed.	Est. Avg. Voc.Ed Enroll. per School	by Level			In Regular Programs		by Special Needs	Financing Vocational Education				Level	Selection	S=School I=Other A=Agency C=Coop. Progm. Arrg.	if Designtd. as Area Voc. Schools Approx. How Many
					H.S.	P.H.S.	Adult	Disad.	Handi.		% Fed.	% State	% Local	% Other	L=Local R=Regnl. S=State O=Other	P=Pop.Vote C=Consti. A=Apptd. O=Other		
1. Regular High School																		
2. Comprehensive High School																		
3. Comprehensive High School (w/cross enrollment - shared-time)																		
4. Occupational Training Annex																		
5. Regional/area Voc-Tech School																		
6. Regional Skill Center																		
7. Adult & Continuing Education Schools																		
8. Technical Training Center																		
9. Technical Institutes																		

FORM 2 - Delivery System Questionnaire - State of ______________________

Col. 1	Col. 2	Col. 3	Col. 4	Col. 5	Col. 6			Col. 7		Col. 8	Col. 9				Col. 10	Col. 11	Col. 12	Col. 13
					Estimated % of Vocational Enrollment										Controlling Bds. Indicate all that apply		Coop. Arrgmts. by Progm.	
Type of Institution Use your own definition (from Form 1)	Total Number of Schools in ea. Categ.	Est. Avg. Total Enroll. per School	Number of Schools Offng. Voc.Ed.	Est. Avg. Voc.Ed Enroll. per School	by Level			In Regular Programs		by Special Needs	Financing Vocational Education				Level L=Local R=Regnl. S=State O=Other	Selection P=Pop.Vote C=Consti. A=Apptd. O=Other	S=School I=Other A=Agency C=Coop. Progm. Arrg.	if Designtd. as Area Voc. Schools Approx. How Many
					H.S.	P.H.S.	Adult	Disad.	Handi.		% Fed.	% State	% Local	% Other				
10. Community/Junior Colleges																		
11. University Branches																		
12. Colleges/ Universities																		
13.																		
14.																		
15.																		
16.																		
17.																		
18.																		

FORM 3 Full-Time Equivalency Description

Please provide a brief statement of your state's definition of full-time equivalency (FTE) for each of the institutions listed below. Be sure to include hours, credits or other appropriate time elements.

Type of Institution	Full-Time Equivalency Definition
1. Regular High School	
2. Comprehensive High School	
3. Comprehensive High School w/cross enrollment	
4. Occupational Training Annex	
5. Regional/Area Vocational Technical Schools	
6. Regional Skill Center	
7. Adult & Continuing Education Schools	
8. Technical Training Center	
9. Technical Institutes	
10. Community/Junior Colleges	
11. University Branches	
12. Colleges/Universities	

ED 010 174.